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ABSTRACTS

(The titles which are set in bold-face are intended as "scanning titles" for ease in classifying and filing. Where these are not substantially the authors' titles the exact titles are set in parentheses.)

1—FIBRES AND THEIR PRODUCTION

(A)—MINERAL

Asbestos: Mineral Fiber of the Textile Industry. Myril C. Shaw. *Papers Amer. Ass. Text. Tech.*, 1950, December, pp. 253-257. (Discussion pp. 257-260.) The author gives a general survey of the use of asbestos. Reference is made to the use of this material between 438 B.C. and 800 A.D. Mining procedure is briefly mentioned, and the different asbestiform minerals are listed, chrysotile being the source of 98 per cent. of asbestos textiles. An account is given of the grading of fibres and of fabrics, and of the industrial applications of the final products. Points touched on in the discussion which follows, include dyeing, staple length, carrier yarns (usually cotton), non-woven fabrics, asbestosis, synthesis, lack of draft, and comparison between asbestos and glass fabrics. **C—1A.**

(B)—ANIMAL

Sheep: Cobalt Deficiency in Queensland. G. R. Moule and R. B. Young. *Queensland Agric. J.*, 1950, **71**, 277-280. Symptoms of cobalt deficiency are described, with particular reference to its correct diagnosis. Methods of overcoming the deficiency are also described. **W—1B.**

New Zealand Wools: Their Uses and Limitations. A. Sharp. *Wool*, 1950-51, **1**, No. 3, 7, 9, 17. The types, uses and faults of New Zealand wools are described. **W—1B.**

Wool Packs. *Pastoral Rev.*, 1951, **61**, 12. The economic importance of wool packs to the Australian clip is stressed. As the sources of supply are India and Pakistan, a determined effort is necessary to discover if jute can be grown on a commercial basis in Australia, and, if not, whether a pack could be manufactured at reasonable cost in Australia from other fibres. **W—1B.**

Wool: Length of Staple in Relation to Classing. "Jason". *Pastoral Rev.*, 1951, **61**, 13. Evenness of length should be maintained in the various lines. The length requirements of wool treated on Noble combs are outlined. The permissible margin of error is greater for inferior style clips, but the rating of any wool should be based on its physical properties and not on its financial value. Evenness of length is particularly important in classing lambs' wool. **W—1B.**

Sheep: A Preliminary Report on the Value of DDT and BHC for the Control of Body Strike. F. H. S. Roberts and G. R. Moule. *Australian Vet. J.*, 1951, **27**, 35-39. Promising results were obtained in field trials from 1·0 per cent. DDT and 0·05 per cent. gamma BHC. No information is available on the relative efficiencies of these two insecticides nor of the most effective rate of application per sheep. Both insecticides gave very good results when used by graziers during the severe body strike wave in the autumn of 1950. **W—1B.**

Sheep: Five Minutes in the Fog. *Farmers Wkly*, Northern Edition, 1951, **34**, No. 13, 40. Fog treatment against lice and fly strike has been successfully used in Australia. It is being tried in Great Britain on long-woolled breeds. The "Tifa" fog-making equipment of the Lister-Todd Engineering Corporation, Ltd., is illustrated and described. **W—1B.**

Wool: Effect of Sympathectomy on Growth. K. A. Ferguson. *Australian J. Sci. Res.*, 1949, **B**, **2**, 438-443. **W—1B.**

Sheep: Field Trials on the Prevention of Body-strike by the Use of DDT and BHC. I. L. Johnstone and M. T. Scott. *Australian Vet. J.*, 1951, 27, 79-82. Effective concentrations were 1 per cent. of DDT or 0·1 per cent. of γ-BHC, applied at the rate of approximately 2 pints per sheep. The period of protection was considered to be at least one month. **W—1B.**

Sheep: Blowfly Problem in Queensland. G. R. Moule. *Queensland Agric. J.*, 1951, 72, 169-175. The various types of blowflies which attack sheep in Australia, and their breeding habits, are described, together with the effects of environment on blowfly strike. **W—1B.**

Wool: Plasticity. J. B. Speakman. *Textile Industries and Fibres*, 1951, 12, 220-221, *Hosiery Trade J.*, 1951, 58, (691), 52, 54. The effect of chemical structure on the visco-elastic properties of wool fibres is discussed. Experiments are described in which the rate of extension, in water, of calibrated wool fibres under a constant load is measured. **W—1B.**

Fellmongering Investigations. XIII. The Use of Mould Protease for Recovering Wool from Sheepskin Pieces. E. M. Jenkins and M. E. Maxwell. *Australian J. Appl. Sci.*, 1950, 1, 363-372. Wool is recovered from sheepskin pieces or low-grade whole skins by complete digestion of the skin tissues with mould photease. The bath is prepared by extracting "mould bran" with water; common salt is added to inhibit growth of putrefactive bacteria and prevent tainting of the wool. Laboratory and pilot plant experiments on the extraction, storage, and preservation of the mould enzyme, and its use in recovering wool, are described. **W—1B.**

Fellmongering Investigations. XIV. Comparison of Wool Obtained by Sweating and Painting Methods. J. M. Gillespie. *Australian J. Appl. Sci.*, 1950, 1, 480-483. Laboratory experiments indicate that 4·8 per cent. of wool recoverable from sheepskins by sweating or by painting with enzyme is lost in the chemical painting process. **W—1B.**

Fellmongering Investigations. XV. The Recovery of Wool from Skin Pieces by Water Digestion Methods. T. A. Pressley. *Australian J. Appl. Sci.*, 1950, 1, 484-496. The method of recovering wool from skin pieces by water digestion has been investigated, using dried crossbred skin, soaked back, and then thermally-shrunk prior to digestion. Digestion is most active at 35-40° C., and takes place in a series of stages. Delimed painted pieces are digested very slowly, but sweated pieces are rapidly attacked. Of the methods tested for accelerating digestion, two warrant full-scale trials: (*a*) sweating the pieces prior to shrinkage, and (*b*) immersion after shrinkage for approx. 8 hours in mould bran extract rich in proteolytic enzymes. The wool recovered by water digestion methods is of good quality, provided the water is changed frequently. The unpleasant odour of the recovered wool is largely removed by treatment with a hot, dilute solution of soda ash. **W—1B.**

Fellmongering Investigations. XVI. A Survey of the Bacterial Flora of Sheepskins. M. E. Maxwell. *Australian J. Appl. Sci.*, 1950, 1, 496-513. Forty-two samples of sheepskin and wool from U.S.A., Canada, and Britain have been examined bacteriologically and the results compared with those obtained with Australian skins. Eighty-three species of aerobic bacteria have been isolated and their biochemical reactions studied. **W—1B.**

(C)—VEGETABLE

Field Nitrates in Gezira Soil. T. N. Jewitt. *J. Agric. Sci.*, 1951, 40, Parts 1 and 2. pp. 160-165. Results of soil nitrate measurements at the Gezira Research Farm are given. The nitrates appear to be washed down and accumulated in the second foot of soil. The yields of irrigated cotton are found to be positively correlated with the amount of rainfall in the 6 weeks before sowing, and *not* to increased nitrate in the top foot of soil at sowing time. There are eleven references. **C—1C.**

Ramie Fibre: Decortication by the Moog Process. Richard Klar. *Melliand Textilber.*, 1951, 32, No. 4, pp. 242-243. In German. A method is described whereby long-staple ramie fibres may be obtained with a minimum of damage. The advantages of the new process are discussed, together with the prospects now open to ramie in the textile and cellulose fields (where an 80 per cent. α-cellulose content is required). **C—1C.**

Bactericidal Potency of Cell Juice as a Factor Determining Varietal Resistance of Cotton to Gummosis [Due to *Bacterium malvacearum*]. L. E. Kramarenko. *Dokl. Akad. Nauk, SSSR (Rep. USSR Acad. Sci.)*, 1949, No. 2, pp. 36-40 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 763). In Russian experiments with several varieties of cotton, direct relation was established between the bactericidal properties of the cell juice of the different varieties, and the resistance of the varieties to gummosis, caused by *B. malvacearum*, the causal organism of blackarm. The bactericidal properties of the cell juice of all varieties increased with the age of the plants. C—1C.

Cotton Production in India. H. W. Spielman. *Foreign Agric. Rep. U.S. Dep. Agric.*, 1950, No. 45, 28 pages (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 763). The topics covered include the history of cotton in India, topography, climate and soils of the cotton areas, agricultural methods, insects and diseases, ginning, handling and marketing, classification of cottons according to grade and staple length, types of cotton grown, warehouses, the work of the Indian Central Cotton Committee, breeding and seed distribution, the cotton trade, and the cotton textile industry. Mention is made of an experimental hybrid, between a local variety and Brazilian Moco, which exudes a gum that engulfs and kills stem weevil larvæ. Varieties resistant to leaf hoppers and to wilt have also been developed. C—1C.

Cotton Variety Tests in the El Paso Valley, 1943-48. P. J. Lyerly, L. S. Stith, G. F. Henry and D. T. Killough. *Bull. Tex. Agric. Exp. Sta.*, 1950, No. 719, 18 pages (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 764). Tests on the agronomic characters and quality of cotton varieties and strains such as Acala, Coker, and Delfos, are reported. C—1C.

1949 Cotton Variety Tests in Hill Sections of Mississippi. J. F. O'Kelly, L. Walton, B. Arnold, B. C. Hurt, Jr., and S. L. Wedgeworth. *Bull. Miss. Agric. Exp. Sta.*, 1950, No. 469, 7 pages (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 764). Information is provided on the results of the 1949 variety trials carried out at different places in the hill areas of Mississippi, and on average varietal yields in previous trials. C—1C.

Cotton Variety Tests in the Yazoo-Mississippi Delta 1945-47. J. B. Dick and S. G. Brain. *Bull. Miss. Agric. Exp. Sta.*, 1948, No. 458, 15 pages (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 764). A detailed report is given of variety tests carried out at several places in the Yazoo-Mississippi Delta during the three-year period. C—1C.

Cotton: Evolution of Blackarm Resistance. R. L. Knight and J. B. Hutchinson. *J. Genet.*, 1950, **50**, pp. 36-58 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 762). A detailed survey is presented of blackarm resistance and its probable genetic origin in Old World and New World cottons (including New World cottons acclimatized in Asia and those acclimatized in Africa). India is the major centre of blackarm resistance, the Indian races of *Gossypium arboreum* and *G. herbaceum* being immune, almost without exception. Two types of genes for resistance are recognized: those having no observable effect upon the plant apart from conferring resistance; and those which affect the plant in other ways and only incidentally impart or enhance blackarm resistance. All the valuable major genes for resistance belong to the former group. In commercial cottons, two main waves of spread of resistance have occurred, one in the Asiatic species, and one in those of the New World. The Asiatic species acquired resistance first through the establishment of the major gene B_4 and an accumulation of minor genes. In New World cottons, genes for resistance have spread from extremely limited sources in Central America; every case of effective resistance studied, with one exception, can be traced to B_2 or B_3 from *G. hirsutum* var. *punctatum*, sometimes strengthened by minor genes; in addition the gene B_5 has been recorded once in *G. barbadense*. The value of resistance genes is discussed; it is concluded that effective resistance can only be founded upon a major gene. C—1C.

Cotton Plant: Evolution. Anon. *Inform. Invest. Agric. (IDIA), B. Aires*, 1950, **3**, No. 30, pp. 19-23 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 763). In Portuguese. A description is given of the cotton breeding methods followed at the research stations of Saenz Peña, Las Breñas, and La Banda (Argentina). Wilt resistance is one of the principal breeding objectives. Information is given on the varieties produced. C—1C.

Blackarm Resistance: Genetics. VIII. *Gossypium barbadense.* R. L. Knight. *J. Genet.*, 1950, **50**, pp. 67-76 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 762). Two types of resistance to blackarm have been found in *G. barbadense*, the weak and seasonally variable resistance of the Sea Island group, and the major resistance found in Grenadines White Pollen. The former type is determined by minor genes, and is probably dependent upon the plant's capacity to harden its leaves rapidly in response to winds and low humidity. The second type of resistance is due to the major gene B_5 fortified by minor genes; this gene is variable in expression, but in general the homozygotes show stronger resistance than the heterozygotes. Gene B_5 is additive in conjunction with each of the genes B_1, B_2, B_3 and B_4. C—1C.

New World Cottons: Genetics of [the Character] "Corky". II. Further Studies on Its Genetic Basis in Relation to the General Problem of Interspecific Isolating Mechanisms. S. G. Stephens. *J. Genet.*, 1950, **50**, pp. 19-20 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 759). C—1C.

Cotton: The Inheritance of Agricultural Characters in Three Inter-Strain Crosses. G. K. Govande and N. V. Joshi. *Indian Cott. Gr. Rev.*, 1950, 4, pp. 46-51 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 759). The genetic variance of ginning percentage, staple length and node number was studied in the F_1 and F_2 of the crosses A8 (*Gossypium arboreum* race *burmanicum*) × Cocanada 45 (*G. arboreum* race *indicum*) and C45 × N6 (*G. arboreum* race *sinense*), and the parent strains. Heterosis was shown in all three characters, the F_1 differing significantly from the parental mean. In ginning percentage and staple length, the heterotic bias was towards a higher value, whereas in node number it was towards a lower number than the parental mean. Within-plot variances were found to be environmental rather than genetic. C—1C.

Asiatic Cottons: The Inheritance and Linkage Relations of the li_d Gene for Lintlessness. G. K. Govande. *Indian J. Genet. Pl. Breed.*, 1948, **8**, pp. 72-102 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 760). C—1C.

Cotton Seed: Method of Treating for Seed-Drill Sowing. I. P. Nanayakkara. *Trop. Agriculturist* (Ceylon), **106**, No. 2, pp. 75-76. This article describes a method of treating cotton seed with a starch solution (one pound of wheat flour in two gallons of water is used for twenty pounds of cotton seed). The results tabulated seem to show that germination was slightly better in starch-treated seed, and began a day earlier. C—1C.

Cotton: Mote [Aborted Seed] Types and Their Occurrence as Related to Variety, Environment, Position in Lock, Lock Size, and Number of Locks Per Boll. N. L. Pearson. *Tech. Bull. U.S. Dep. Agric.*, 1950, No. 1,000, 37 pages (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 760). Motes, or aborted seeds, may be caused by the action of insects or micro-organisms, or may be due to genetic or environmental factors. Those in the latter group are divided into two classes based principally on size and general appearance. Varietal differences in mote formation are recorded. Production of large motes was not found to be consistently related to production of small motes. The operation of specific heritable factors for large and small mote formation is indicated. C—1C.

Cotton: Multibranched Habit. L. V. Rumševič. *Selekcija i Semenovostvo* (*Breeding and Seed Growing*), 1950, No. 4, pp. 75-76 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 761). The article deals with some early varieties of cotton selected at the Fergana Research Station of the U.S.S.R. Cotton Institute. A character common to these new varieties is the production of supplementary sympodial branches, bearing up to three bolls which reach maturity at the same time as the bolls on the rest of the plant. Breeding for the multibranched habit, including Mičurinite training upon fertile soil, is advocated. Continued improvement of some of these varieties by family selection is being attempted. C—1C.

Cotton: Salt Resistance of Varieties at the Germination Stage, and the Influence of Inorganic Salts on the Cell Contents. N. Enomoto and T. Nagai. *Proc. Crop. Sci. Soc. Japan*, 1942, **14**, pp. 5-14 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 760). A comparison is made between the reaction of two cotton varieties to immersion in inorganic salt solutions, particularly in as far as germination is affected. C—1C.

Cotton: Percentage of Crossing in a Field. H. A. Zunino. *Inform. Invest. Agric. (IDIA), B. Aires,* 1949, **2**, No. 24, p. 12 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 760). In Portuguese. Cross pollination of 10-12 per cent. was observed in the Roque Saenz Peña presidency of Argentina. It was caused almost exclusively by insects. C—**1C.**

Cotton: Percentage of Free Pollination in a Field. H. A. Zunino. *Inform. Invest. Agric. (IDIA), B. Aires,* 1949, **2**, No. 24, p. 12 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 760). In Portuguese. Under conditions of the Roque Saenz Peña presidency of Argentina, cross pollination of between 8 and 10 per cent. was observed in cotton fields up to a distance of 50 metres and over, being caused mainly by insects. C—**1C.**

Cotton: Response to Leaf-Curl Disease. J. B. Hutchinson and R. L. Knight. *J. Genet.*, 1950, **50**, pp. 100-11 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 763). A survey has been made of the reaction of 671 strains to leaf curl, potentially the most serious disease of Egyptian cotton in the Sudan. *Gossypium arboreum* and *G. herbaceum* are effectively immune, and *G. hirsutum* and its vars. *punctatum* and *Marie-galante* are highly resistant; a large proportion of susceptible strains is found within *G. barbadense*. It is believed that the disease reached the Sudan from West Africa through a chain of host plants across the northern equatorial region, and that it spread within the Sudan from one major cotton area to another chiefly by means of riverain crops of bamia. A very much wider range of symptoms of the disease is to be found in West Africa than in the Sudan, suggesting that West Africa constitutes the centre of variability of the virus. Unlike blackarm, leaf curl does not appear to be specific to cotton. A large proportion of cottons possess resistance that cannot have been developed under the selective impact of the disease. Artificial selection for resistance has been achieved by the accumulation of minor genes; even in susceptible varieties, little change in the genotype is required to provide virtual immunity. C—**1C.**

Verticillium Wilt of Cotton with Particular Emphasis on Variation of the Causal Organism. J. T. Presley. *Phytopathology*, 1950, **40**, pp. 497-511 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 763). A study was made of the variability in morphology and pathogenicity shown by biotypes of *V. albo-atrum*. Most of the isolates fall into four main cultural groups, pathogenicity being associated with cultural type. None of the locally adapted varieties of Upland cotton tested in Mississippi was resistant to *Verticillium* wilt; of the varieties introduced from other parts of the U.S.A., Hartsville was found to possess a high degree of resistance, and is now being used in breeding for resistance. C—**1C.**

Tingo Fibre from Nyasaland. A. E. Chittenden and H. E. Coomber. *Col. Plant & Animal Prod.*, 1950, **1**, No. 2, pp. 138-140. An examination of tingo fibre, *Ponzolzia hypoleuca*, a fibre related botanically to ramie and used by the natives in Nyasaland for making fish nets, is described. The ultimates are found to be shorter and, like ramie, it contains a considerable amount of gummy material which is not removed by retting alone. The fibre can be degummed by special treatment, but the prepared fibre is weak. The authors do not consider it to be of potential use commercially in the textile industry. C—**1C.**

(D)—ARTIFICIAL

Cellulose: Solubility in Sulphuric Acid in Relation to Film and Thread Manufacture. Walter König. *Melliand Textilber.*, 1951, **32**, No. 4, pp. 290-295. In German. Some essential details are given of patent literature on the preparation of sulphuric acid solutions of cellulose suitable for spinning of threads or manufacture of film. The concentrations of acid recommended differ greatly from patent to patent and in this paper a detailed account is given of an investigation into the matter. In a preliminary investigation on the behaviour of beechwood cellulose, it was found that of a number of inorganic and organic acids, sulphuric acid had the greatest swelling action. After discussing and tabulating the swelling figures for various cellulosic materials (for example, beechwood, ramie, Egyptian and American cottons, and cotton linters) in different concentrations of sulphuric acid, the author deals more specifically with beechwood and cotton linters and spinning problems. The conclusion drawn is that sulphuric acid solutions of cellulose are a practical proposition for thread or film production, being comparatively simple and requiring two

ingredients only, namely the acid and the cellulose. As an economical proposition, the process depends on the success of sulphuric acid recovery. C—1D.

PCU (Polyvinyl Chloride) Fibres. Friedrich Lieseberg. *Melliand Textilber.*, 1951, **32**, No. 3, pp. 169-172 In German. The production, properties, and possible applications of PCU (polyvinyl chloride) fibres are discussed. The author compares the chemical, physical and textile properties of this fibre with those of other synthetic fibres and of cotton. C—1D.

Terylene, Fiber V: Development, Manufacture and Properties. Paul-August Koch. *Textil-Rdsch.*, 1951, **6**, No. 3, pp. 107-110. The author gives in concise form the history and development of Terylene, or Fiber V (now known as "Dacron"). His survey covers chemical, physical and mechanical properties, structure, applications of this fibre, and the patent position. There are forty-five references. In German. C—1D.

Vinylon From Japan: A New Synthetic Fibre. Japan Synthetic Textile Association. *Text. World*, 1951, **101**, No. 4, pp. 123, 232. Some information is given about Vinylon, a new Japanese polyvinyl alcohol synthetic fibre. A table is given in which the properties of Vinylon are compared with those of other fibres (natural, regenerated and synthetic). C—1D.

[Dynel] Textile Fiber: Development. H. S. Bunn. *Papers Amer. Ass. Text. Tech.*, 1950, December, pp. 232-233. In this introductory talk, the author gives a brief history of the work of the Union Carbide and Carbon Corporation (U.S.A.), leading up to the development of synthetic resins, the thermoplastic "Vinyon" fibre, "Vinyon" N continuous filament yarn, resistant to boiling water, and finally the staple fibre Dynel, which is sixty per cent. vinyl chloride and forty per cent. acrylonitrile. (See also following abstract.) C—1D.

[Dynel] Fiber Characteristics and Behaviour. C. A. Setterstrom. *Papers Amer. Ass. Text. Tech.*, 1950, December, pp. 232-235. This article gives a detailed account of the properties of Dynel, and their advantages and disadvantages to processers and consumers. Points dealt with are the specific gravity, moisture regain, resilience, tenacity and elongation, stiffness, and "toughness"; and resistance to combustion, shrinking, chemical tendering, moths, and fungi. (See also preceding abstract.) C—1D.

Man-made Fibres in the Textile Industry. B. Sutcliffe. *J. Rossendale Text. Soc.*, 1950-51, pp. 1-7. The essential molecular requirements for fibre structure are briefly reviewed. Various man-made fibres are listed, and their spinning techniques described. W—1D.

Fibre E. *Knitted Outerwear Times*, 1951, **19**, (26), 23. Note on a new rayon fibre, named Fibre E, introduced by du Pont, which is said to be chemically indistinguishable from a conventional viscose rayon yarn, but having the ability to take a crimp through special spinning techniques. H—1D.

Patents

Self-Honing Fibre Flock Cutting-Machine. J. H. Powell. B.P.605,280: Appl. 16/11/1945; Filing 8/11/1946; Publ. 20/7/1948. This patent is concerned with a machine for cutting fibres, tobacco paper, *etc.* into short lengths in which rotary knives are made to slide against a honing surface during a substantial part of each cycle. As described for the purpose of cutting fibre into flock (about 1 mm. long) the cutting chamber is a cylindrical hole in a block of flint glass and the knives are slidably mounted within radial slots on a rotor that is eccentrically mounted within the hole. The fibre is fed as a spun cord, rope or sliver through a side wall of the block at the point of minimum clearance between the rotor and the wall of the hole, and the cut flock falls out of the hole, assisted, if desired, by a downward air blast that also serves to cool the knives. Centrifugal force drives the knives against the wall of the hole during rotation so that honing is almost continuous. As the critical angle between the knife edge and the fibre for efficient cutting varies for different fibrous materials the machine may be provided with a set of rotors in which the knife slots are inclined at various angles to the radius of rotor. Several modifications in detail of the general claim are covered in the 19 claims. C.

Centrifugal Fibre-Spinning Machine Stop-Motion. Prince-Smith and Stells Ltd. and E. E. Feather. B.P.605,365: Appl. 20/12/1945; Filing 21/7/1948; Publ. 21/7/1948. A stop-motion for the Prince-Smith and Stells centrifugal spinning machine comprises a pivoted biased detector normally supported by the spun roving and having a bifurcated rear end that coacts with contacts in circuit with an electromagnetically controlled roving trap located behind the back rollers. This trap consists of a polished cylindrical abutment opposite to which a blade carried by the armature of the controlling electromagnet is disposed, the roving passing between the abutment and the blade. C.

Viscose Granulator. Courtaulds Ltd., W. R. Weigham, W. J. C. Field and F. G. Dunton. B.P.642,270: Appl. 5/4/1948; Filing 5/4/1948; Publ. 30/4/1950. In a process for the production of viscose, a mixture of cellulose xanthate and caustic soda solution is fed through a granulator having a number of compartments, each provided with a perforated base and rotating blades. The mixture is fed continuously to the top and withdrawn continuously from the bottom, the rate of feed and the speed of rotation of the blades being such that scarcely any resistance is offered to the blades. C.

Regenerated Tow Liquid-Treatment Apparatus. J. F. Keggin and Imperial Chemical Industries Ltd. B.P.642,359: Appl. 1/6/1948; Filing 27/5/1949; Publ. 30/8/1950. In a method for the continuous treatment of a filamentary tow with liquid of a higher specific gravity, the tow is carried by a current of the liquid through a tube that leads to an upward slanting tube of wider bore (progressively widening, if desired) so that the tow is really immersed in the liquid. The rate of flow and length of the slanting tube are such that the duration of the treatment is sufficient. The invention relates particularly to the insolubilisation of a tow of regenerated peanut globulin filaments by means of an acidified saline solution containing formaldehyde. C.

Linear Super-polyester Filaments: Production. Wingfoot Corporation. B.P. 642,423: Appl. and filing 22/9/1947; Publ. 6/9/1950; U.S.A. appl. 29/3/1947. The invention relates to a combination of the use of acid chlorides with direct condensation of glycols and dicarboxylic acids in the production of linear super-polyesters that may be extruded and converted into filaments by cold drawing. For example, diethylene glycol is heated with less than the stoichiometric proportion of maleic anhydride until condensation is complete, and then sufficient maleyl chloride is added to combine with the excess of glycol, and heating is continued until the condensate has a molecular weight in excess of 10,000. C.

Alkali-Cellulose Slurry: Production. Courtaulds Ltd., Donald Entwistle and W. R. Weigham. B.P.642,483: Appl. 5/5/1948; Filing 4/5/1949; Publ. 6/9/1950. The object of the invention is to reduce the ripening period in the production of viscose. The pulp is made into a slurry in 17-25 per cent. caustic soda containing a small proportion of a cobalt compound (such as 20 parts per million of cobalt acetate), and gas containing oxygen (such as air) is passed through the slurry, at 35-40° C., until the fluidity of the cellulose is brought to that desired for viscose production (for instance 15-20 units in a 1 per cent. solution in cuprammonium). C.

Centrifugal Fibre Spinning Machine. P. F. Martinez. B.P.642,821: Appl. and filing 3/8/1945; Publ. 13/9/1950; Spanish appl. 5/10/1944. A machine for the centrifugal spinning of fibre into slivers, rovings and yarns comprises a rotating vessel open at one end, in which yarn is wound to lie against the wall, the yarn passing through a guide that also operates as a pneumatic yarn ejector and can be positioned within the vessel, and a bobbin holder that can be withdrawn from the vessel as the guide is inserted, and *vice versa*. In the first phase of spinning, drawing and twisting occur and the yarn remains around the inner wall of the vessel. This phase is succeeded by a second in which the yarn is wound on to a bobbin that is projected into the vessel and then removed, whereupon the first phase is repeated and so on. C.

Continuous Rayon-Spinning Machine Clutch-Drives. Courtaulds Ltd. (for Industrial Rayon Corporation). B.P.642,847: Appl. and filing 25/5/1948; Publ. 13/9/1950. The invention relates to clutch drives for a rayon-spinning machine having several sets of thread-advancing reels whereby one set can be stopped without interfering with the others. C.

Yarn and Filament Drawing Apparatus. Imperial Chemical Industries Ltd. B.P.643,516: Appl. 14/4/1947; Filing 14/4/1948; Publ. 20/9/1950. The invention relates to a system of rollers that is designed to prevent slipping when used to draw a yarn or filament by stretching. The material is passed round an idler roller and at least one additional support so that it makes at least one complete circuit round them, but makes only an arc of contact with, but does not encircle, the driving roller which forwards it by friction. Two examples are described, with machine drawings; one relates to the drawing at 80° C. of Terylene yarn, and the other to the stretching and ring-twisting of a viscose yarn. C.

Artificial Yarn and Filament Draw-twisting Apparatus. Imperial Chemical Industries Ltd. and T. H. Farrand. B.P.643,625: Appl. 16/6/1948; Filing 15/6/1949; Publ. 20/9/1950. In a process for the production or treatment of a yarn or filament (for example, the draw-twisting of Terylene yarn) wherein the material is collected continuously on a rotating package, the initially non-uniform material is first collected in a suction tube near the receiving package, but away from the source, until stable operating conditions have been attained. Various details are covered by the 25 claims. C.

Thread-Advancing Rolls: Method and Apparatus for Loading. Lustrafil Ltd. and Sydney Warren Barker. U.S.P.2,545,015: Appl. and filing 8/12/1947 (in Great Britain 17/2/1946); Publ. 13/3/1951. C.

Cotton Picker Spindle [for Mechanical Harvester]. International Harvester Co. and Clarence R. Hagen. U.S.P.2,546,185: Appl. and filing 15/4/1949; Publ. 27/3/1951. C.

Bale of [Long] Fibrous Material and Process of Forming Same. Jan Hendrik Zimmermann. U.S.P.2,546,809: Appl. and filing 29/7/1946 (in the Netherlands 25/2/1941); Publ. 27/3/1951. C.

Cotton Picker Spindle Slat Fastening Means [for Mechanical Harvester]. John D. Rust. U.S.P.2,548,068: Appl. and filing 2/4/1946; Publ. 10/4/1951. C.

Crimped Filaments: Manufacture. Henry Von Kohorn and Ralph S. Von Kohorn. U.S.P.2,548,181: Appl. 11/3/1946; Publ. 10/4/1951. C.

Casein: Manufacture of Textile Fiber. Antonio Ferretti. U.S.P.2,548,357: Appl. 5/12/1946 (in Italy 6/3/1941); Publ. 10/4/1951. C.

Artificial Fibers [of Irregular Cross-Section]: Device for Manufacture. Marcel Delamere Deboutteville. U.S.P.2,549,179; Appl. and filing 17/2/1948 (in France 1/7/1941); Publ. 17/4/1951. C.

Cross Winding Threads on their Supporting Reels. Société Rhodiaceta and Marcel Rouge. U.S.P.2,550,086: Appl. and filing 19/3/1946 (in France 18/3/1941); Publ. 24/4/1951. C.

2—CONVERSION OF FIBRES INTO FINISHED YARNS

(A)—Preparatory Processes

Ginning Technique for Small Samples: Standardisation. R. L. N. Iyengar and D. L. Sen. *Indian Cott. Gr. Rev.*, 1950, **4**, pp. 26-36 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 758). A standard ginning procedure is described which is recommended for use at all breeding stations. The suggestion was accepted by the Indian Central Cotton Committee at its meeting held in November, 1947. C—**2A.**

Gill Box Fallers. *Fibres*, 1951, **12**, 160-161. The function of fallers in achieving fibre control and blending is discussed, with particular reference to pinning, and to the prevention of faller locking by means of the Holdsworth high-speed cam. W—**2A.**

Tops from Short Wool. ("Short Wool Top Making Requires Special Care.") V. Saxl. *Text. World*, 1951, **101**, No. 4, 104-105, 262, 264, 266, 268. Procedure in scouring, carding, pre-combing gilling, rectilinear combing, and post-combing gilling is recommended for producing tops from wools of 1¼-1½ inch average staple length. Details are given of calculations for use in running rectilinear combs. These calculations concern the following: production of combs; theoretical values for shortest fibres in tops and longest fibres in noils (theoretical border values) in inches; purity of tops; practical draft; approximate percentage of noils (developed from Johannsen's formula). W—**2A.**

Carding. ("Dorr Woolen Installs New Wide Cards.") Dorr Woolen Co. *Text. Industr.*, 1951, **115**, No. 3, 94-99. Tandem-style, 3-cylinder Duesberg-Bosson card sets have been installed in an American mill. Pits below the surface of the floor accommodate the 50 inch doffer cylinders. The cards have the following features: centralised pressure-type lubrication; large-capacity, automatic hopper feeder; 36 inch metallic breast with automatic burr remover; pneumatically-loaded Peralta rollers; Belgian-type parallel fibre intermediate feed; tape condensers supported by heavy rollers, in addition to a tension roller inside the top apron. W—**2A.**

Compound Oils. ("Verbundschmälzen.") E. Borchardt. *Text.-Praxis*, 1951, **6**, 99-102. Opinions from the literature are quoted, relating to the advantages and disadvantages of mineral oil and of olein for wool oiling. It is suggested that the term "compound oils" should be used for a mixture of mineral oil with organic fats, emulsifying agents, peptising agents, and additions to facilitate removal in scouring (waschaktive Zusätzen). A table gives a comparative evalution of the properties of compound oils and olein. W—**2A.**

Worsted Carding: Burr Removal on the Standard Worsted Card. Platt Bros. (Sales) Ltd. *Platt's Bull.*, 1951, **7**, 166-167. A woollen type taker-in has been applied between the feed roller and the first large taker-in, with an angle stripper and, in some cases, two metallic clothed rollers over the first large taker-in. This has resulted in the burring power of the set being increased 10-15 per cent. over that of the standard card. W—**2A.**

Card for Wool Yarn. ("Krempeln für Streichgarn.") German Standards Committee. *Text.-Praxis*, 1951, **6**, 228-231; *Melliand Textilber.*, 1951, **32**, 370-373. This German tentative standard (DIN 64118) defines and illustrates the terms used for single cards and for sets of cards, and for the card webs, laps and slivers produced. It also gives mechanical details of the various rollers and other parts of the card, and of sets of cards for woollen spinning, vigogne and two-cylinder spinning, and coarse yarn spinning. W—**2A.**

Rubbing Leathers for Woollen Cards. ("Nitschelhosen für Streichgarnkrempeln.") German Standards Committee. *Text.-Praxis*, 1951, **6**, 231; *Melliand Textilber.*, 1951, **32**, 374. This German tentative standard (DIN 64119) defines the method of working, construction and sizes of rubbing leathers for woollen cards. W—**2A.**

Nylon Staple: Use in woollen Mills. H. Garner. *Canad. Text. J.*, 1951, **68**, No. 13, 62-65. Outlines some of the advantages of blending nylon staple with wool, including better yarn strength, increased resistance to abrasion, and softer and loftier yarns for knit goods. W—**2A.**

Carding: Improving Efficiency of Open-type English Scribblers and Cards. H. V. Tetlow. *Text. Mfr*, 1951, **77**, 288-291. Outlines methods of modernising old scribblers and cards to give greater flexibility in dealing with different types of blends and to reduce the amount of waste normally created in the open type card. In particular, the design of fancy covers with suction fillings is discussed. W—**2A.**

Woollen Condensing. Anon. *Text. Industries and Fibres*, 1951, **12**, 231-232. A comparison is made of the advantages and disadvantages of ring doffer (single ring and double doffer) condensers and tape condensers. W—**2A.**

Carding: The Function of the Doffer. A. de Swaan. *J. Textile Institute*, 1951, **42**, P209-212. The action of the doffer and its influence on the combing action of the cylinder and other parts of the machine is discussed. Experiments to illustrate the action are described. W—**2A.**

(B)—Spinning and Doubling

Flisca/Wool and Flisca/Cotton Mixture Yarns: Properties. A. Linder. *Textil-Rdsch.*, 1951, **6**, No. 3, pp. 100-106. In German. A comparison of processing characteristics and physical properties of wool and wool/Flisca unions, shows that there is little difference in the yarns, and hence that dilution of wool with Flisca is a feasible proposition. When mixed with cotton, however, the results are not as good, the extensibilities of the materials being unequal. Nevertheless, reasonable mixtures are possible and the best conditions are indicated. Increasing use is being made of such mixtures. Graphs and data tables are given. (The nature of Flisca fibre is not indicated.) C—**2B.**

Mixture Yarns: Production on a Doubling Frame. Rolf Fahrbach. *Textil-Praxis*, 1950, 5, No. 6, pp. 345-347. In German. Formulæ are given for estimating the required draft and the hank number of component rovings necessary to produce a mixture yarn of given percentage composition and count on a doubling frame. C—2B.

Bast Fibre Mixture Yarns: Spinning. Hans Ebert. *Melliand Textilber.*, 1951, 32, No. 3, pp. 175-6. In German. The author discusses the difficulties inherent in the manufacture of mixture yarns containing bast flock and cotton and/or rayon staple fibre. The preparation of a 3-ply mixture yarn on a triple-roll (high-speed) ring-spinning frame is presented as an example of procedure to be followed. C—2B.

Nylon Yarn: Spinning on the Woollen System. E. I. du Pont de Nemours. *Text. Industr.*, 1951, 115, No. 1, pp. 124, 199, 201. Information is given on the opening, carding and spinning of nylon staple fibre on the woollen system. C—2B.

Thread Breakage in Ring-Spinning: Uneven Tension. F. Oertel. *Melliand Textilber.*, 1951, 32, No. 4, pp. 244-247. In German. The author discounts the suggestion that irregular running of the traveller, due to faults in the ring, is the principal cause of end-breakage during spinning. He suggests that breakage most often results from changes in tension in the yarn, arising from such causes as change in balloon shape, varying diameter of bobbin along its length, incorrect spinning regulation, and so on. These and other factors are discussed, and several interesting graphs and diagrams illustrate the points raised. C—2B.

Mule or Ring Frame for Woollen Yarns? ("Streichgarn-Ringspinnmaschine oder Wagenspinner?") W. Frotscher. *Text.-Praxis*, 1951, 6, 123-126, 232-235. An account is given of the historical development of continuous spinning machinery. Modern types of woollen ring frame are described and illustrated, with particular reference to the twist tube. The advantages of ring spinning are explained; figures show the respective space requirements of mules and ring frames. Modern developments in mule construction and driving are also noted. The question of the character of the yarn produced and its effect in the fabric is discussed; the results are given of tests on flannel and Saxony fabric woven partly from ring yarn and partly from mule yarn; the flannel showed negligible differences in the ring and mule portions; in the Saxony, the ring portions appeared clearer and more uniform than the mule portions, owing to the ring yarn having a lower felting capacity; in the absence of comparative tests, it is stated that longer milling time compensates for this decreased felting power, without impairing the handle of the fabric. W—2B.

Woollen Mule and Ring Frames: Critical Comparison of the Yarns and Fabrics Produced. ("Streichgarnselfaktor und -ringspinnmaschine mit kritischem Vergleich an Hand von Garnen und Geweben.") W. Frotscher. *Melliand Textilber.*, 1951, 32, 79. The development of woollen ring frames and mules is described. Figures show the comparative space requirements for the same production on mules and frames. New developments mentioned are a mule with a stationary carriage and a moveable creel, and a ring frame with rotating drafting rollers to replace the false twist tube and drawing rollers. The properties of fabrics from mule-spun (I) and frame-spun (II) yarns are briefly compared. Air permeability is about 1·2 per cent. greater with (II); tensile strength is 4·6 per cent. greater in the warp direction and 2·9 per cent. greater in the weft direction with (I); resistance to rubbing is 50 per cent. greater with (I). There is no difference in fabric thickness. W—2B.

Woollen Mule and Ring Spinning Machine: Comparative Production and Economics. ("Die Produktionsverhältnisse und Grenzen der Wirtschaftlichkeit zwischen Streichgarnselfaktor und Ringspinnmaschine.") C. Sustmann. *Melliand Textilber.*, 1951, 32, 80. A summarised version of a previous article. (See *J. Textile Institute*, 1951, 42, A49.) W—2B.

Roving Control in Woollen Spinning. ("Die Ausführung von Vorgarn- und Feingarnkontrollen in der Streichgarnspinnerei.") G. Liebig. *Melliand Textilber.*, 1951, 32, 173-175. Causes of fluctuations in the count of roving are discussed. Sampling procedure for checking roving count is described. Factors concerned in producing level yarns in mule spinning are surveyed. W—2B.

Spinner's Double. *Fibres*, 1951, 12, 161. The causes of this fault are discussed, and possible remedies suggested. W—2B.

Roving Weight and Spun Count: Principles of Calculation. *Wool Rec.*, 1951, 79, 1662, 1664. The calculation is given for converting the roving dram weight into the same count system as the spun yarn. The draft to be applied is found by dividing the spun count by the roving count. Factors influencing the draft required are briefly discussed. W—2B.

Spinning Machine: Description. ("The 'Super-Rotaring' and its Future in the Worsted Industry.") J. Gauthier. *L'Ind. Text.*, 1951, 68, 125-130. A continuous spinning machine with a moveable spindle rail and revolving rings is described and its mechanism illustrated. The spindle rail has two synchronised movements, a slow, steady descent which continues throughout the formation of the package, and an up-and-down movement to produce a normal build. The ring rail is fixed. The revolving rings are mounted on ball bearings in the fixed rail to give smooth running. Details are given of the creel, draft zone, rings, electromagnetic brake, spindles, and driving mechanism. W—2B.

Coloured Twist Shades. R. S. Audley. *Fibres*, 1951, 12, 159-160. A brief discussion of the effect of twist on cost and counts in spinning coloured twist yarns, and of factors bearing on production. W—2B.

Worsted Ring Spinning: Efficiency Factors. G. E. Sheard. *Text. Mfr*, 1951, 77, 211-215. Improvements in ring spinning are described, with details of rings and travellers, and methods of lubrication. The application of the system to worsted spinning, particularly for the lower qualities, is discussed. The correct assessment of the relationship between the package barrel diameter and the ring diameter is essential for successful worsted ring spinning. Examples are given for various wool and mohair qualities, with ring diameters of 1½ inch, 2 inch, and 2½ inch. W—2B.

Centrifugal Spinning. *Amer. Wool and Cotton Rep.*, 1951, 65, No. 24, 29-31. Details of the construction and advantages of the new Prince-Smith centrifugal worsted spinning frame. W—2B.

Worsted Spinning Processing (Continental Stellite), similar to the American System: New Preparing System in— ("Nouveau système de préparation en filature procédé laine peignée (Continental Stellite) et parallèle avec le système 'américain'".) *Rayonne*, 1951, 7, No. 5, 99, 101, 103-105. The American, Continental, and Continental Stellite systems of worsted spinning are compared, figures being given for the three systems for the same count and rate of production. With the Continental and Continental Stellite systems, top from a rectilinear comb and a mixture of long and short fibres may be used, whereas the American system requires Noble-combed top. W—2B.

Ambler Super-draft Process for Worsted Spinning: Developments. M. Hannah. *J. Textile Institute*, 1951, 42, P246-P250. The paper describes how faults in the top front drafting rollers affect yarn irregularity. It explains why these faults are more important at high than at low drafts. W—2B.

Drafting: Fibre Control. Larbreck. *Text. Merc.*, 1951, 124, 1074-1080. Drafting with spindle draft is quoted as an argument in favour of mule spinning. The change points fitted for varying the relationship between draft and twist are noted, and the effect of various combinations on the spinning properties are given. W—2B.

Worsted Yarns: Faults. *Wool Rec.*, 1951, 79, 2013-4, 2106, 2108. The causes of faults in worsted yarn are described, together with methods of preventing them. W—2B.

Mule for Woollen Yarn. ("Wagenspinner/selfaktor/für Streichgarn.".) German Standards Committee. *Text. Praxis*, 1951, 6, 227-228; *Melliand Textilber.*, 1951, 32, 374-375. This German tentative standard (DIN 64015) defines the terms used for the various parts of the woollen mule, and for draft and twist. It also states the requirements for driving, sizes of rollers, *etc.* W—2B.

Pot Spinning. J. J. McCann. *Papers of the American Association of Textile Technologists*, 1951, 6, 36-42. The advantages of centrifugal spinning are stated. The working of the McCann pot spinning frame is described and illustrated, special reference being made to a frame with 50 pots to each side, and to the pot twister. Details are given of the power cost of pot spinning. W—2B.

McCann Pot Spinning Frame: Electrical Components. E. H. Fairbanks. *Papers of the American Association of Textile Technologists*, 1951, **6**, 43-45. The development of the driving motor for the individual pot is described. The present model, KTA-11, was developed in 1936, and is an auto-damped rayon-bucket spinning motor. Power conversion data are given. W—**2B.**

Laminated Plastics in McCann Process. R. M. Baril. *Papers of the American Association of Textile Technologists*, 1951, **6**, 46-47. General Electric Co.'s Textolite laminated plastics are used in the McCann process for the spinning and twisting bucket, and, with the addition of graphite to obviate the use of oil, for the guide tube, draft roller bushing, and full tube bushing. W—**2B.**

Woollen Yarn Spinning. *Wool Rec.*, 1951, **79**, 2111, 2113. The Reiter woollen ring spinning frame is described, its various special features being noted. W—**2B.**

(D)—YARNS AND CORDS

Novel Twist Yarns. *Wool Rec.*, 1951, **79**, 1679, 1681, 1693. Manufacturing details are given for crêpe yarns for hand knitting, and for marl mixture and twist yarns for hosiery, hand knitting, and weaving. Details are given of precautions necessary for avoiding faults liable to occur in manufacturing these yarns. Particulars are also given of a yarn for ladies' light-weight costume cloths, in which a double twisting operation is involved. W—**2D.**

PATENTS

Cellulose Acetate Crêpe Yarns and Fabrics: Production. British Celanese Ltd. B.P.642,333: Appl. and filing 15/10/1947; Publ. 30/8/1950; U.S.A. appl. 16/10/1946. Cellulose acetate crêpe yarns are produced by sizing to 2-5 per cent. with an aqueous solution of a cellulose ester (for instance cellulose acetate of 19-29 per cent. acteyl content, calculated as acetic acid), which may contain urea of a di- or poly-ethyleneglycol, and then imparting a crêpe twist while the yarn is under the influence of steam or other hot aqueous medium. Crêpe fabrics are obtained from materials woven from such yarns by a boil-off treatment. C.

High-Draft Mechanism. J. M. Termens. B.P.642,419: Appl. and filing 26/8/1947; Publ. 6/9/1950; Spanish appl. 9/9/1946. A drafting mechanism, capable of drafts of 60-70 with cotton, comprises in series a pair of feed rollers, a first condenser mounted on an arm for following the reciprocating movement of the sliver guide, a pair of intermediate drafting rollers, a tensioning or pressure roller, a freely-suspended second condenser, connected with the first for following the movement of the sliver, and a pair of main drafting rollers. C.

Ring Frame Cop-Building Device. Tweedales and Smalley (1920) Ltd. and John Lang. B.P.642,436: Appl. and filing 22/11/1947; Publ. 6/9/1950 [Addition to B.P.581,519*]. The roller which operates in conjunction with the block protruding from the links of the builder chain (as covered by B.P.581,519) is mounted on two brackets so that it can be adjusted horizontally as well as vertically. (*See .) C.

Ring Frame Ring Rail. Howard and Bullough Ltd. and W. R. Townley. B.P.642,458: Appl. 15/6/1948; Filing 1/4/1949; Publ. 6/9/1950. The invention relates to means for securing rings to the ring rails. The holes in the rail are fitted with pegs or the like (for instance hardened steel balls retained by caulking in recesses) and the lower flanges of the rings are grooved, partly helicoidally upwards, so that the projections from the holes in the rail fit into the grooves in the rings and on turning the rings the grip is tightened. C.

Comber Drawframe. E. L. Dotti. B.P.642,647: Appl. and filing 19/9/1946; Publ. 6/9/1950; U.S.A. appl. 9/5/1946. According to the description and illustrations one form of this invention comprises a pair of endless chains or belts carrying transverse combs or quills over guide pieces that define an upper, horizontal bed of combing points. Another pair of chains or belts carries a series of rods that press between the rows of combing points as the two sets are driven in the same direction, the rods serving to remove fibre that collects around the combs. A second set of rods carried by another pair of chains or belts may be mounted above the assembly, intercalated with the tops of the combing points. In an alternative system there are two sets of combs on endless chains or belts, the horizontal path of the upper set coming at the bottom so that there is a straight path for fibre between the two sets, and each set is provided with its chain of clearing rods. It is claimed that fibre drafting can be performed at more than tetn times the normal speed. C.

Nylon Sewing Thread: Production. Clark Thread Co. B.P.642,658: Appl. and filing 17/3/1947; Publ. 6/9/1950; U.S.A. appl. 12/4/1946. A number Y of nylon yarns, each twisted according to the formula $3{\cdot}45\sqrt{(5315/D)}$ (where D is the denier), are twisted together (with reverse twist) according to the formula $3{\cdot}45\sqrt{(5315/DY)}$, boiled with soap solution while in a relaxed state, and then exposed to steam at about 245° F. Alternatively steaming in the taut or relaxed state may precede the boil. The thread does not shrink at temperatures up to 245° F. [The twist formulæ presumably relate to turns per inch but this is not definitely stated.] C.

Ring Frame Bunch-building Traverse Mechanism. Ashton Brothers & Co. Ltd. and F. E. Smallshaw. B.P.642,724: Appl. 22/3/1947; Filing 20/3/1948; Publ. 9/9/1950. Automatic bunch-building mechanism for a ring frame comprises two cam surfaces on a single rotary member that give throws of different lengths and a single follower that engages each surface in turn, whereby the chase during formation of the bunch of the cop is different from that during the main cop-building operation. C.

Cap Spinning and Twisting Frame. Ira Ickringill & Co. Ltd. and A. D. Ickringill. B.P.642,896: Appl. 28/11/1946; Filing 5/11/1947; Publ. 13/9/1950. A method of spinning and/or twisting natural or artificial fibre consists in (*a*) passing the product from the drafting rollers on to a rotary cap or equivalent cylinder that is furnished with a guide which leads on to a bobbin, and (*b*) driving the cap or cylinder to rotate about the bobbin, which can have a lagging action. It is claimed that the high speed of cap spinning is thus secured without the usual ballooning and irregular insertion of twist. C.

Drawframe Electric Draft-Control Device. J. N. Hiensch. B.P.642,942: Appl. and filing 15/12/1948; Publ. 13/9/1950. The invention claims to secure differential drafting of a sliver according to the number of fibres occurring in the cross-section as the sliver, previously rendered electrically-conducting by passage through an electrolyte solution or a colloidal solution of a metal or graphite, passes through the nip of a pair of contact rollers located between the feed and drafting rollers. The contact rollers are in a circuit with a conventional resistance-responsive motor controller that governs the drive of the top drafting roller so that if a thin element of sliver arrives the resistance rises, the motor slows down and drafting is retarded whereas a thicker element of sliver is drafted at a higher rate. The top feed and drafting rollers are driven by belt and pulley or chain and sprocket wheel from their motors (the feed roller slower than the drafting roller) and the bottom rollers may be geared to their top rollers or may rotate freely. C.

Fibre-Lap Roll Changing Device. O. C. Hinson. B.P.643,477: Appl. and filing 28/7/1947; Publ. 20/9/1950; U.S.A. appl. 17/5/1945. The invention relates to automatic means for mounting a fresh lap-roll on a rotatable support when the roll in working position becomes so small that it drops between its supports. Details are shown in three sheets of machine drawings for the particular case of a Heilmann comber. There are 26 claims. C.

Combing Machine Cylinder Clearing Device. A.-G. J. J. Rieter & Cie. B.P. 643,665: Appl. and filing 20/2/1947; Publ. 27/9/1950; Swiss appl. 9/10/1946. An arrangement for clearing comb cylinders comprises a change-speed gear by means of which the difference between their peripheral speed and that of the rotary brushes may be changed at will, compared with the conditions obtaining in the normal operative state. C.

High-Drafting System Aprons. Dayton Rubber Manufacturing Co. B.P. 643,666· Appl. and filing 28/2/1947; Publ. 27/9/1950. Aprons for high-draft mechanisms are made by coating a cylinder or mandrel with a layer of rubbery material, placing over it a layer of inextensible cords or fibres parallel to the longitudinal axis of the apron, applying another layer of rubbery material, and vulcanising the built-up body. Recipes are given for rubbery materials containing Neoprene, Perbunan, Thiokol and flexible Glyptal. C.

Drafting-Roller Coverings from Ethylene-Modified Polyvinyl Alcohol. Armstrong Cork Co. and J. W. Baymiller. B.P.643,764: Appl. and filing 16/1/1948; Publ. 27/9/1950 (U.S.A. appl. 7/2/1947). A drafting-roller covering that is highly resistant to "fibre lapping" is formed of ethylene-modified polyvinyl alcohol, such as the product of the hydrolysis of a co-polymer of

ethylene (5) and vinyl acetate (95). The material may contain a plasticizer, for example, 25-35 parts of ethylene glycol to 100 parts of the co-polymer. C.

Twist Tube Appliance. Platt Brothers & Co. Ltd., W. H. Watson and Stanley Kershaw. B.P.643,789: Appl. 24/9/1947; Filing 24/9/1948; Publ. 27/9/1950. The invention relates to various forms of appliances for use with twist tubes, embodying the following features: (1) easy threading of the tube, (2) self-opening twister jaws, (3) a brake for stopping the rotation of the tube, (4) lifting and braking of the tubes and opening of the jaws are effected in one operation by means of a toggle lever and spring, and (5) component parts are readily interchangeable. C.

Machines for Supporting and Transporting Webs of Textile Fibres. H. Duesberg. B.P.649,343 of 24/1/1951. Means are claimed for supporting and transporting the web in removing foreign bodies by pressing cylinders in wool carding. Supporting cylinders of asbestos, or of an agglomerate based on asbestos, or of a plastic material which can be highly polished, are provided for feeding the web to, and withdrawing it from, the pressing cylinders. Means are provided for adjusting the speed of the supporting cylinders, and the distance between the supporting and pressing cylinders. W.

Removing Foreign Matter from Textile Fibres. Forte, Dupee, Sawyer Co. B.P.650,029 of 14/2/1951. The web from a carding or a garnett machine is advanced on an apron. Liquid is applied to cause the fibres to cling to a supporting surface, which is advanced at a greater surface speed than that of the web. The fibres are thus drawn out parallel into a film, which is substantially of single fibre thickness, and which is subjected to pressure by a wire-wound roller to disintegrate foreign matter, especially burrs. The disintegrated matter is then separated from the fibres by agitation (*e.g.* by brushes), after the web of fibres has been dried (*e.g.* by infra-red lamps). W.

Fibre Cleaning Machines. B. F. Perkins & Son, Inc. B.P.651,978 of 11/4/1951. Fibre cleaning apparatus consists of successive pairs of lower, intermediate and upper co-acting drawing rollers, followed by successive pairs of lower and upper co-acting extender rollers. The drawing rollers are arranged below the extender rollers. The upper drawing rollers are rotatable in vertically-fixed bearings; the intermediate and lower drawing rollers are rotatable in bearings movable up and down, so that the distance between the pairs of drawing rollers may be varied. W.

Electrically-driven Centrifugal Spinning, Twisting and like Machines. Prince-Smith & Stells Ltd. and E. E. Feather. B.P.653,036 of 9/5/1951. Centrifugal spinning and like machines operate without supervision for a predetermined period. An adjustable make-and-break contact mechanism is provided in the main power circuit, in series with one or more normally open switches. The operation is effected mechanically by a moveable element, such as the bobbin carriage of the machine, when unwinding commences. The make-and-break contact mechanism may be operated thermostatically. W.

Spinning Ring. Irby M. Goree. U.S.P.2,541,238: Appl. and filing 1/10/1948; Publ. 13/2/1951. C.

Drafting Uniform Roving: Process and Apparatus. Johannes N. Hiensch. U.S.P.2,542,331: Appl. and filing 19/3/1947; Publ. 20/2/1951. C.

[Delivery Rollers of] Textile Fiber Working Machine. Saco-Lowell Shops and Ernest H. Rogers. U.S.P.2,544,965: Appl. and filing 10/1/1948; Publ. 13/3/1951. C.

Multiple Fiber Strand [of Thermoplastic Polymer]. Plex Corporation and James Bailey. U.S.P.2,545,869: Appl. and filing 17/2/1948; Publ. 20/3/1951. C.

Spinning Spindle Assembly. SKF Industries Inc. and Per Gunner Palmgren. U.S.P.2,546,473: Appl. and filing 11/4/1946; Publ. 27/3/1951. C.

Slivers: Device for Placing into Cans. Joh. Jacob Rieter & Cie and Werner Naegeli. U.S.P.2,546,557: Appl. and filing 29/7/1947 (In Switzerland 10/7/1946); Publ. 27/3/1951. C.

Drafting Mechanism in Spinning or Like Machines. Casablancas High Draft Co. Ltd. and Joseph Noguera. U.S.P.2,548,232: Appl. and filing 26/3/1948 (in Great Britain 9/4/1947); Publ. 10/4/1951. C.

Paper Strips: Apparatus for Forming into Continuous Label Forming Bands for Yarn [Skeins] and the Like. Caron Spinning Co. and Stanley E. Tribbey. U.S.P.2,548,451: Appl. and filing 29/3/1949; Publ. 10/4/1951. C.

Spinning Machine [Spinning Frame Twisting Mechanism]. Oswald Lambert. U.S.P.2,548,610: Appl. and filing 24/2/1947 (in Belgium 4/10/1945); Publ. 10/4/1951. C.

Spinning and Twister Frame: Traverse Motion Drive. Precision Gear and Machine Co. and Jesse B. Goodgame. U.S.P.2,548,719: Appl. and filing 14/12/1949; Publ. 10/4/1951. C.

Cotton Cleaner. Arthur C. Moody. U.S.P.2,549,223: Appl. and Filing 10/4/1946; Publ. 17/4/1951. C.

Flyer for Textile Machines. Walter Hartley. U.S.P.2,549,599: Appl. and filing 14/10/1949 (in Gt. Britain 28/5/1949); Publ. 17/4/1951. C.

Dust and Lint Blower for Spinning Frames. Luther Y. Herren. U.S.P.2,549,601: Appl. and filing 18/1/1950; Publ. 17/4/1951. C.

Double-Twist Twisting Mechanism. Deering Milliken Research Trust and Norman E. Klein. U.S.P.2,549,821: Appl. and filing 2/10/1947; Publ. 24/4/1951. C.

Strands: Method of Twisting together to Form a Ply Construction. United States Rubber Co. and Robert J. Clarkson. U.S.P.2,550,136: Appl. and filing 18/12/1948; Publ. 24/4/1951. C.

Spindle and Bobbin Shaft Mounting for Roving Frames. Precision Gear and Machine Co. Inc. and Jesse B. Goodgame. U.S.P.2,551,210: Appl. and filing 6/11/1950; Publ. 1/5/1951. C.

3—CONVERSION OF YARNS INTO FABRICS

(A)—Preparatory Processes

Cotton System Warping Equipment as Used with Magazine Type Cone Creels: Maintenance and Operation. John C. Bodansky. *Text. Industr.*, 1951, 115, No. 1, pp. 113-120. C—3A.

Mill-Warping *v.* Beaming for Automatic Weaving. Max Paul. *Melliand Textilber.*, 1951, 32, No. 3, pp. 179-181. In German. To obtain the full benefit of high-productivity from automatic looms, it is essential that the most efficient and economical method of preparing weaver's beams should be employed. Comparison of beaming and mill-warping systems shows that the former has many advantages over the latter. These advantages include (*a*) the possibility of introducing mass-production methods by reason of time-saving in the sizing process; (*b*) less rewinding; (*c*) higher rate of beaming; and a better separation of the threads after the sizing operation. C—3A.

Automatic Cone and Pirn Winding. R. E. Hopkins. *Canad. Text. J.*, 1951, 68, No. 9, 67, 69, 71, 77. Various types of Abbott automatic cone and pirn winders and attachments are described. W—3A.

C)—Weaving

Point-Paper Diagrams for Practical Reproduction of Complex Patterns. Herbert Diez. *Melliand Textilber.*, 1951, 32, No. 3, pp. 187-188. In German. The production of point-paper diagrams for complex pattern weaves is exemplified by reference to a taffeta-based cloqué weave. This, as with other patterns reproduced in the article, is accompanied by the appropriate peg, draft and dent plans. C—3C.

Shaft Motion and Shed-Opening on Crankshaft-Operated Looms. J. Ozga. *Melliand Textilber.*, 1951, 32, No. 4, pp. 251-254. In German. The relationship between shaft motion and the effective duration of the opening of the shed is discussed; a method of calculating this duration is briefly indicated. A survey of the development of crankshaft control of the two movements is given with reference to various machines, and is supplemented with diagrams of the mechanisms based essentially on the Hattersley crankshaft system. C—3C.

Turkish Towelling Weaves. H. Petzold. *Melliand Textilber.*, 1951, 32, No. 4, pp. 258-262. In German. The article describes the fundamental structures of Turkish towelling, and methods of manufacture. C—3C.

Warp Breakages: The Part Played by Knots. J. L. Crabtree and W. R. Campbell. *Scottish Woollen Technical College Year Book*, 1950, 77-78. Preliminary tests have been made on the efficiency of various types of knot. The piecer's knot was outstandingly poor, but its performance was considerably improved by the addition of a half-hitch. The largest proportion of knots failed between the shafts and the back beam before any friction was applied by the shafts or reed. Slipped knots were responsible for 42 per cent. of loom stoppages due to warp failure. The thin spots and soft places in the warp were more liable to fail when subject to friction. The results are also given of tests to determine the performance of the knots under a straight pull, and of the times necessary to tie the different knots. W—**3C.**

Automatic Looms: Designing. *Wool Rec.*, 1951, **79**, 1844, 1849. Types of automatic looms are described, ranging from broad width looms with provision for only one shuttle, to automatic looms able to weave pick-at-will designs in more than one colour. The suitability of these types of looms for various weaves and yarns is discussed. W—**3C.**

(D)—KNITTING

Knitted Outerwear Goods: Production. ("Production Control Assures Flexibility for Knitted Outerwear Plant.") Robert Reinthal. *Text. Industr.*, 1951, **115**, No. 1, pp. 121-124. A description is given of the system, employed by an American firm, for the control of the production, packing and despatch of knitted outerwear goods. C—**3D.**

["Textile World"] 1951 Annual Knitting Section: Maintenance for Maximum Production. E. Dalton White *et al.*, *Text. World*, 1951, **101**, No. 4, pp. 92-103. C—**3D.**

Full-Fashioned Hosiery Machines: Lubrication. William M. Smith. *Text. Industr.*, 1951, **115**, No. 1, pp. 97-99. The author outlines a routine system for the lubrication of full-fashioned hosiery knitting machines. C—**3D.**

Knitting Elastic: Process. J. B. Lancashire. ("Developments in elastic knitting.") *Hosiery Times*, 1951, **24**, (265), 35, 37-8. Discusses the knitting of rubber yarns into fabrics and the necessary attachments and modifications to the machines for the process, mentioning, in particular, the Poron unit. Photographs are given showing circular machines fitted with the Poron unit. H—**3D.**

(E)—LACEMAKING AND EMBROIDERING

Sinfra Yarn Production. Wilhelm Busch. *Melliand Textilber.*, 1951, **32**, No. 3, pp. 176-178. In German. Two machines for the production of Sinfra knitted yarns are described. On one machine two threads are knitted together—the loops having a regular or irregular length—by means of a single needle. On the second machine, in which there is a plurality of needles, up to four threads can be knitted together, the resulting yarn being essentially tubular; core threads may be included within the tube. By using threads of various colours, yarns of striking appearance can be developed. Both machines incorporate yarn doubling devices. The resulting yarns are bulkier, weight for weight, than the more usual hand-knitting yarns, and hence have a warmer feel. The yarns have also been used on looms and knitting machines. A wide variety of applications of the yarn is anticipated. C—**3E.**

(F)—SUBSEQUENT PROCESSES

Hosiery Inspecting Machine. *Hosiery Industry Whly*, 16/7/51, **60**, (3), 3, 13. Note on a new hosiery inspecting and mending machine, introduced by Shoaf Hosiery Mills Inc. Illustrations. H—**3F.**

(G)—FABRICS

Glass Fabrics: Preliminary Processing and Weaving. Max Steiner. *Text. Industr.*, 1951, **115**, No. 1, pp. 109-111. The sizing, warping, and weaving operations for the production of glass fabrics are outlined. Some glass fabric constructions for curtains and draperies are indicated. C—**3G.**

Resilient Products Composed of Latex Bonded Fibres. L. Appleton. *Trans. Inst. Rubber Ind.*, 1947, **23**, No. 1, pp. 41-45. The author describes a process of the manufacture of rubberised hair from curled animal hair bonded with Hevea latex rubber and vulcanised to a high elastic modulus. There are six references. C—**3G.**

Some Observations on the Hardening Process used in Felt Manufacture. (I) Factors Influencing Hardening. R. S. M. Frohnsdorff and C. S. Whewell. *J. Soc. Dyers Col.*, 1951, 67, 142-148. The hardening of masses of loose wool under various conditions is studied, the effectiveness of the operation being assessed by measuring the air permeability (on a Cambridge instrument) and the breaking load of samples of the hardened material. It is shown that on a Garson plate hardener, maximum hardening is effected by processing for 80 seconds, prolonged treatment yielding weaker pads. The use of high steam pressures also tends to produce weak pads. Hardening is more effective in presence of acids than under neutral or alkaline conditions, but if the amount of sulphuric acid exceeds about 2 per cent., degradation occurs. Phosphoric, acetic, and formic acids behave similarly to sulphuric acid at the same *pH* value, but if the *pH* is less than 2 the strength of the hardened pad falls. Chlorinated wool is more difficult to harden than unchlorinated wool. W—**3G.**

PATENTS

Polyvinyl Monofilament Seat-Cushion Fabric: Application. Firestone Tire and Rubber Co. and T. W. Stedman. B.P.605,697: Appl. 13/1/1944; Publ. 29/7/1948 (Conv. 20/8/1941). The invention relates to seat cushions in which the body is composed of sponge rubber or the like and the resilient cover is woven from monofilaments, preferably concavo-convex in section, of a vinylidene chloride co-polymer. Various weaves may be employed and the fabric is claimed to be highly resistant to abrasion, cutting, water, and acids, besides being strong and pervious to air. C.

Rayon Crêpe Yarn: Warping. Algemeene Kunstzijde Unie N.V. B.P.642,113: Appl. and filing 17/2/1947; Publ. 30/8/1950; Dutch appl. 28/3/1946 and 29/11/1946. The claim is for two measures by which rayon crêpe yarn can be warped from creels of normal construction, *viz.* (1) choosing and combining the directions of twisting and unwinding overhead, and if necessary also the direction of winding on the bobbin, so that increase of twist results on unwinding, and (2) placing the thread guide very close to the bobbin, that is, at a distance less than the radius of the bobbin. C.

Straight-Bar Knitting Machine Chain Driving Mechanism. Soc. Italiana Ernesto Breda per Costruzioni Mecchaniche. B.P.642,121: Appl. and filing 2/5/1947; Publ. 30/8/1950; Italian appl. 16/2/1946. The carrier bar of a straight-bar knitting machine, for instance of Cotton's patent type, is reciprocated by a chain driven by a sprocket, that is operated by a gear slidably mounted on a driving shaft and connected thereto by heliocoidal ribs and grooves. C.

Circular Knitting Machine Stop-Motion. B. Toone (Nottingham) Ltd. and T. L. Allen. B.P.642,154: Appl. 11/10/1947; Filing 16/11/1948; Publ. 30/8/1950. Stop-motion mechanism for a circular knitting machine comprises a pivoted feeler one end of which is in the path of out-flung latches, the other end holding up a slidable weight so long as working is normal. If the feeler is displaced by a latch the weight drops and actuates means for stopping the machine. C.

Heeling-Machine Needle-Feeding Apparatus. George Blackburn & Sons Ltd., H. W. Short and Cyril Raynor. B.P.642,222: Appl. 11/6/1948; Filing 28/6/1949; Publi. 30/8/1950. Apparatus for use in running a stocking blank on to the needles of a heeling machine comprises (*a*) two sets of points divided into two groups, that can be disposed parallel or in line, and (*b*) a rotary disc cutter for each set carried by a longitudinally movable slide between the two groups of points, when they are disposed parallel, to sever fabric that is placed on the points. C.

Fashioned Elastic Article Warp Knitting Machine. Franz Stolle, Herman Stolle and Antonin Pejsek. B.P.642,243: Appl. and filing 26/8/1946; Publ. 30/8/1950; German appl. 30/8/1950. The invention relates to mechanism (thread guides etc.) provided on a Raschel machine by means of which one or more elastic weft threads can be incorporated under varying tension in a warp-knitted fabric. Details are shown in three sheets of machine drawings. C.

Winding Machine Thread-Furnishing Mechanism. Maschinenfabrik Schweiter A.G. B.P.642,251: Appl. and filing 23/6/1947; Publ. 30/8/1950; Swiss appl. 29/6/1946. The invention relates to mechanism for furnishing thread to a winding machine, of the kind comprising a turntable carrying several spare

spools or cops and having a guide through which the threads are drawn and fastened, and in which a feeler controls the stopping of the winding apparatus, the starting of the turntable and also of a knotting device. The new modifications are concerned with (1) a thread slot and clamp arranged perpendicularly over each spool, (2) a catching hook that draws the thread of the spool which is unwinding parallel to the thread of the following spool as the turntable moves forward, and (3) the arrangement of the knotter in the space between the unwinding and the new spools. C.

Straight-Bar Knitting Machine Welt Turning Mechanism. F. L. Sanderson. B.P.642,263: Appl. 10/2/1948; Filing 9/3/1949; Publ. 30/8/1950. The invention is concerned with a set of instruments, mounted on a bar, which are operated to cover the beards of a pre-determined number of needles during the sinking of the first course (so that the loops are cast off on to the welt hooks when the needles are lowered in the normal manner), are moved into engagement with the needles to cover the beards when the loops on the welt hooks are returned to the needles, and are raised relatively to the needles after the instruments and needles have penetrated the loops to hold them in a raised position to permit of the withdrawal of the welt hooks. C.

Winding Machine Thread-Tension Equalising Device. Courtaulds Ltd. and T. S. Mayner. B.P.642,273: Appl. and filing 15/4/1948; Publ. 30/8/1950; U.S.A. appl. 16/4/1947. In apparatus for winding thread on a surface-driven winding or collecting device, variations in tension of the thread are compensated for by providing a fluid coupling between the driving roller and the source of power. C.

Circular Independent-Needle Knitting Machine Cam Systems. G. Stibbe & Co. Ltd., E. V. Stibbe and Bert Smith. B.P.642,374: Appl. 2/12/1946; Filing 18/11/1947; Publ. 30/8/1950. The invention claims to reduce the time and work required for cam adjustment in a multi-feed circular knitting machine, by the provision of mechanisms for effecting multiple adjustments simultaneously. Details are shown in five sheets of machine drawings. C.

Braided Cord Belting: Production. British Celanese Ltd. B.P.642,445: Appl. and filing 23/12/1947; Publ. 6/9/1950; U.S.A. appl. 28/12/1946. Cords for use as warp in belting are prepared by applying an adhesive (such as rubber latex) to folded yarns (for instance stretched and saponified cellulose acetate, 1350 denier, 1800 filaments, 2 turns per inch S twist, folded 5 ends with 1·5 t.p.i. Z twist), assembling a number (seven, for instance) of such yarns in parallel order, and enclosing them in a braided sheath (for example 16 yarns applied clockwise and 16 anti-clockwise, each of 25s 4 cotton, 3 t.p.i.). A typical cord has a breaking load of more than 600 lb. and an elongation at break of 10-11 per cent., and 1 lb. of it is about 52·3 yards longs). C.

Knitting Machine Loop-Tension Equalising Devices. B. T. R. Reymes-Cole. B.P.642,522: Appl. 30/3/1945; Filing 6/4/1946; Publ. 6/9/1950. The invention relates to spring means for operating on either the needles or the sinkers of an independent-needle knitting machine (such as a circular machine) to impart loop-tensioning movement to closely-recurrent individuals or groups of such instruments in one course and to intervening instruments in another course, at a stage in the knitting operations whereat stitch-formation is substantially complete. Mechanism is also provided for dividing the sinkers into closely-recurrent and intervening sinkers (odd and even, for example) and for nullifying the spring influence as required after knock-over. The devices apply tension to speed loops in one course and intervening loops in another course and so on, alternately, and thereby secure more even distribution of loop irregularities. C.

Nylon Stockings: Seaming. Clark Thread Co. B.P.642,660: Appl. and filing 17/3/1947; Publ. 6/9/1950; U.S.A. appl. 12/4/1946. [Divided out of B.P. 642,658.] The claim is for the use of the shrunk, pre-set sewing thread covered by B.P.642,658* for seaming nylon stockings. [*See C.1951/2127.] C.

Straight-Bar Knitting Machine Heel-Fashioning Mechanism. Karl Lieberknecht Inc. (Inventor—E. M. Zesch.) B.P.642,682: Appl. and filing 11/9/1947; Publ. 6/9/1950. The invention relates to mechanism that can be fitted to any flat hosiery frame (especially of the Cotton type), by means of which complete stocking blanks with either square or oblong inset, or gore heel cheeks, can be knitted continuously. Details are shown in twelve sheets of machine drawings. C.

Circular Knitting Machine Latch Retarding Mechanism. Bentley Engineering Co. Ltd. B.P.642,720: Appl. 24/1/1947; Filing 14/1/1948; Publ. 13/9/1950. In plating and in one-and-one rib knitting on circular latch-needle machines, especially of the opposed needle cylinder type, it is frequently necessary to retard the closing of the latches. The invention claims latch-engaging mechanism for effecting retardation to a variable extent while the machine is in operation. C.

Loom Stretcher Roller Mechanism. Herman Bechter. B.P.642,721: Appl. and filing 30/6/1947; Publ. 13/9/1950; Swiss appl. 16/2/1946, 23/3/1946 and 31/8/1946. A device for stretching cloth weft-way on a loom consists of a roller that is divided into sections, each cut with helical grooves of constant pitch, but the pitches increasing step-by-step from the centre to the two ends of the roller. The roller is urged by adjustable springs in the direction of travel of the cloth against an angular rail over which the cloth passes. C.

Glued Tufted Sheet Material: Production. Margaret McConnell and Sofia W. Edinger. B.P.642,733: Appl. 29/5/1947; Filing 29/6/1948; Publ. 13/9/1950. A method of making pile fabric (for rugs, carpets, *etc.*) comprises feeding the required number of filaments (any type) horizontally so that their front ends extend to the same vertical plane, holding them near the front ends and applying a backing of adhesive material (latex, synthetic resin etc., containing powdered cork if desired to form a non-slip layer), cutting to the desired pile length, removing the pile sheet material so formed, advancing the remaining filaments and repeating the cycle of operations. Suitable apparatus is shown in two sheets of drawings. C.

Rubber Roller Loom Temples. John Broadbent. B.P.642,785: Appl. 30/1/1948; Filing 29/1/1949; Publ. 13/9/1950. The usual type of roller temple is replaced by a pair of adjustable coiled-spring loaded rubber or rubber-covered rollers between which the cloth passes. C.

Needle Loom Weft Carrier Mounting. E. T. M. Bewley. B.P.642,818: Appl. 28/5/1948; Filing 28/5/1949; Publ. 13/9/1950. The invention is concerned with means for effecting the movement of the weft carrier needles on a needle loom for smallwares. The needles are mounted on a member that slides to and from in the loom batten so that their movement through the sheds is a plain sliding motion and their forward movement, whereby the threads are fed to the latch needles, is achieved by the normal forward motion of the batten itself. C.

Straight-Bar Knitting Machine Yarn-Severing Device. William Lindstorff. B.P.642,822: Appl. and filing 10/12/1945; Publ. 13/9/1950. The 19 claims of this invention cover automatic means for severing the threads in a straight-bar knitting machine without leaving long ends, or stopping the machine, or utilising space outside the row of needles. The cutters are arranged in the sinker carrier for operation by the catch bar, like the sinkers, and means are provided for holding the threads during and after the cutting operation. C.

Loom Picking Mechanism. British Cotton Industry Research Association (Inventors: Marjorie G. Catlow, Cornelius Mack and J. J. Vincent). B.P. 642,856: Appl. 17/7/1948; Filing 13/7/1949; Publ. 13/9/1950. A loom picking mechanism, operating on the shuttle over a pre-determined distance (for example 1 ft.) in order to give it a predetermined ultimate velocity, is characterised in that a first operative part of the picking cam or tappet is so shaped that, without recourse to clamping, it stresses the picking mechanism until, the shuttle having meanwhile moved only a small first part of the said distance, such stress reaches a value that produces an acceleration in excess by not more than 10 per cent. of that constant acceleration which, if applied over the whole distance, would produce the required ultimate velocity of the shuttle, and in that the remaining operative part of the cam or tappet is so shaped as to maintain this stress without the acceleration exceeding the prescribed limit. Equations are given for the curve of the cam or tappet face for producing an ultimate shuttle velocity of 43·5 ft. per second (for an operating distance of 1 ft.) when the maximum acceleration is 31·4, 31·1 or 30·1 times the force of gravity. The invention is claimed to save power and reduce stresses, vibration and noise in operating a loom. C.

Bonded Fibre Structural Sheeting: Fabrication. Fibre Products Laboratories Inc. B.P.642,890: Appl. and filing 15/7/1946; Publ. 13/9/1950; U.S.A. appl. 1/8/1940. The 30 claims of this invention relate to the production of a

structural material of high density and strength for its thickness by forming loose fibre of which 70 per cent. at least is of ¾ in. staple (for instance cotton) into a drafted lap in which the fibres mostly come within 15° of a mean direction, and applying a bonding agent (such as glue, latex, asphalt, thermoplastic resins *etc.*) under pressure. For example, a scutcher lap of cotton may be carded, and the sliver processed on sliver and ribbon lap machines and further drafted on a frame with five pairs of drafting rollers. C.

Cylinder and Dial Knitting Machine Cam Systems. G. Stibbe & Co. Ltd., E. V. Stibbe and Bert Smith. B.P.642,929: Appl. 21/10/1947; Filing 7/9/1948; Publ. 13/9/1950. An independent-needle knitting machine of the cylinder and dial type is fitted with a knocking-over cam and an associated guard cam whereby some of the knitted loops are knocked-over to the face of the fabric and others to the back (as in rib, purl and interlock fabrics). The two cams are attached to a machine part that is slidably mounted within the dial cam cap or ring, and can be adjusted radially by means of a screw. C.

Shuttleless Elastic and Ribbon Loom. Clutsom and Kemp Ltd and Charles Clutsom. B.P.642,985: Appl. 20/8/1948; Filing 31/3/1949; Publ. 13/9/1950. Stationary weft supply looms of the kind used for the production of elastics and ribbons are fitted with weft-laying members and weft-engaging members on both sides of the warp sheet. The operative extremities of the weft-laying members travel in paths that are oppositely inclined with respect to the plane in which the fabric is woven, so that during each forward stroke of each of these members the operative extremity moves from a low plane, on one side of the warp shed in which it is below the thread engaging element on that side, to a higher plane in which it passes above the thread-engaging element on the other side of the shed, and *vice versa*. The weft-engaging members are latch needles, so that knitted selvedges are produced. Details are shown in eight sheets of drawings. C.

Polyvinyl Alcohol Loom Picker. Armstrong Cork Co. B.P.643,040: Appl. and filing 14/11/1947; Publ. 15/9/1950; U.S.A. appl. 20/12/1946. The claim is for the use of moulded polyvinyl alcohol as a picker. A preferred composition is polyvinyl alcohol (100 parts) plasticized with glycerin (10-30) and benzaldehyde (10-30). C.

Loom Picking Mechanism. J. E. Roig. B.P.643,050: Appl. and filing 31/12/1947; Publ. 15/9/1950; Spanish appl. 11/12/1944 [Addition to B.P. 581,430*]. The parent invention claimed a driving mechanism for picking sticks in which an eccentric or cam operated on a roller pivoted to a spring-tensioned movable rack geared to a toothed segment on the vertical picking shaft. The present invention replaces the rack by a longitudinally displaceable bar to which is pivoted (*a*) one end of a rod the other end of which is pivoted to an arm on the picking shaft or (*b*) a fork in which is slidably mounted a bearing to which is articulated the arm on the picking shaft. [*See *J. Textile Institute*, 1947, **38**, A113.] C.

Yarn-Cake Unwinding Holder. Thomas Fishwick. B.P.643,065: Appl. 3/4/1948; Filing 1/4/1949; Publ. 15/9/1950. A holder for a yarn cake that will expand automatically to any size of cake and keep constant expansion during unwinding, comprises two spaced end flanges which have disposed across between them a number of segmental members, pressed outwardly by springs, and carried by arms that slide in bearings within members, on the inner side of the flanges, mounted on an axle or tube. One flange is detachable so that the cake can be placed around the retracted segmental members. A friction brake is provided to prevent overrunning. C.

Smallware Loom Cam-Shedding Mechanism. T. F. Wilkinson & Co. Ltd., T. B. Wilkinson and K. Harbourn. B.P.643,130: Appl. 7/7/1948; Filing 7/7/1949; Publ. 15/9/1950. The shaft of a cam mechanism for the shedding motion of a smallware loom is carried by bearings (in a box-like casing) which are held in position by a member that can be readily removed for changing the shaft or its cams. C.

Smallware Loom Batten-Operating Mechanism. T. F. Wilkinson & Co. Ltd., T. B. Wilkinson and K. Harbourn. B.P.643,131: Appl. 7/7/1948; Filing 7/7/1949; Publ. 15/9/1950. The batten is slidably mounted on transverse guideways and means driven from a crank shaft are fitted to impart reciprocatory motion. A driven shaft of non-circular cross-section, mounted parallel with the

guideways, slidably engages with a pinion carried by the batten, and a secondary rack operates the batten rack by engagement with the same pinion. C.

Vinyl Chloride Resins: Application in Multi-Ply Collar and Cuff Fabrics. E. I. du Pont de Nemours & Co. B.P.643,206: Appl. and filing 17/4/1946; Publ. 15/9/1950; U.S.A. appl. 20/4/1945. In order to reduce the cost of expensive solvents in the use of vinyl chloride resins as coating material of an interlining fabric for making semi-stiff collars, cuffs and the like, the resin is dispersed as a dough-like mass with the help of plasticizers, *e.g.* diocetyl phthalate. Examples are given. C.

Straight-Bar Knitting-Machine Thread-Distributing Device. Marcel Pourchot. B.P.643,264: Appl. and filing 6/7/1945; Publ. 15/9/1950. The claims are for a straight-bar knitting machine, formed with at most two sections, in which the means for distributing the thread comprises a number of rigid and fixed bars longer than the needle bed, disposed in equal numbers at the front and at the rear of the machine, each front bar serving as a guide for a sleeve that carries a thread thrower or guide, and each rear bar serving as guide for a driving sleeve to which is imparted a to-and-fro motion, by means of a rack engaging a pinion connected to the loop-forming mechanism. The driving sleeve is controlled by a driver connected by two flexible blades to the sleeve carrying the thrower on the corresponding front bar. Details are shown in four sheets of machine drawings. C.

Styrene/Maleic-Anhydride Co-polymer: Application as Sizing Agent. Monsanto Chemical Co. B.P.643,273: Appl. and filing 8/11/1946; Publ. 15/9/1950; U.S.A. appl. 1/12/1945. Warps (all common types of fibre) are sized by the application at 150-200° F. of a solution of an ammonium or alkali salt of a co-polymer of maleic anhydride and styrene or a substituted styrene, so as to leave 2-15 per cent. (say, 4-7 per cent.) of resin on the warp after drying at 200-300° F. Weaving is performed at 45-65 per cent. R.H. C.

Laterally-Open Shuttle. Urquhart Lindsay and Robertson Orchard Ltd. and L. G. Kinnear. B.P.643,312: Appl. and filing 4/8/1948; Publ. 15/9/1950. The invention relates to a simplification of shuttle-threading by the use of a shuttle with a laterally open cop-chamber, which weaves "lying on its side". The thread is guided by an L-shaped pin into a central groove, from which it cannot slip out by the same route. It is considered that the advantages of this new type of shuttle, which is suitable for use in automatic looms, are constructional simplicity, ready threading of the weft, and easier control of weft thread during weaving. The solid end-portion of the shuttle, contiguous to the paying-out end of the cop, has a deep longitudinal groove cut into it, approximately centrally, which extends to the cop chamber; immediately above and parallel to this central groove is a secondary short groove, merging into a slot which is open to the cop chamber and extends perpendicularly to the axis of the cop. An L-shaped pin is inserted into a hole drilled at the cop-chamber end of the central groove, and at right-angles to it. The other arm of this pin can then be turned into position within the short secondary groove, thus parallel to the cop axis. A felt or other drag is placed in the central groove. C.

Automatic Four-Box Shuttle-Changing Loom. Les Fils de Guillaume Diederichs. B.P.643,349: Appl. and filing 27/8/1947; Publ. 20/9/1950; French appl. 6/3/1944. The invention relates to means for preventing vibration in the parts of the pattern mechanism of a 4-box automatic shuttle-changing loom. A system of latches is interposed in the shuttle-change mechanism. These are actuated by the movement of the pattern mechanism, and the carrier arm that transports the shuttles abuts against them in three of its four positions and against a fixed stop screw in the fourth position. C.

Tongueless Shuttle. Linen Industry Research Association, Harold Boffey, Webb & Co. Ltd. and W. H. Webb. B.P.643,376: Appl. 2/12/1947; Filing 2/12/1948; Publ. 20/9/1950. The cavity of a shuttle in which a cop is unwound from the inside is so shaped and lined with a pile fabric that the cop is just a good push fit if inserted from the end, but the pile is so chosen that movement of the cop in the opposite direction is prevented. C.

Figured Crêpe Cellulose/Nylon Mixture Fabrics: Production. Christian Bener. B.P.643,386: Appl. and filing 24/12/1947; Publ. 20/9/1950; Swiss appl. 26/6/1943. Figured crêpe fabrics are produced by weaving cotton or viscose

rayon fabrics with nylon yarns according to a pattern, and treating the material with a swelling agent that causes shrinkage in the cellulosic ground. Thus, the material may be mercerised, or rendered transparent by treatment with sulphuric acid followed by mercerisation. Alternatively, the swelling agent is applied locally. Coloured effects are obviously possible. C.

Cloth Inspection Machine. F. S. A. Brett. B.P.643,406: Appl. 23/2/1948; Filing 9/12/1948; Publ. 20/9/1950. The invention relates to a cloth inspection machine that can be fed direct from the loom, and on which the direction and speed of travel of the cloth can be readily changed and the inspection and plaiting operations can be controlled by a single switch. Details are shown in three sheets of machine drawings. C.

Links-and-Links Knitting Machine Needle-Jack Lifting-Members. Jacquard Knitting Machine Co. Inc. and C. F. Miller. B.P.643,457: Appl. and filing 13/11/1946; Publ. 20/9/1950; U.S.A. appl. 13/11/1945. The invention is applicable to both rotary and stationary needle-cylinder knitting-machines of the links and links type, and relates to the construction of and means for operating the needle-releasing jacks so as to reduce wear. A recess is provided at the back of the tail end of each jack and, at each station where a jack may be required to release a needle, a cam is fitted to depress the tails of jacks that are to release their needles and thus rock those jacks to raise their heads from the needle hooks. C.

Large-Package Shuttle Tongue. Crossley Shuttles Ltd. and Frank Wilkinson. B.P.643,497: Appl. 2/10/1947; Filing 2/10/1948; Publ. 20/9/1950. The claim is for a shuttle tongue in which the head is at least double the usual width, and is retained in the weaving position against a stop or support by two or more helical or blade springs of the normal width. C.

Large-Capacity Headless Bobbin. British Celanese Ltd. B.P.643,500: Appl. and filing 31/10/1947; Publ. 20/9/1950; U.S.A. appl. 2/11/1946. The claim is for a yarn-package support that comprises a barrel with reduced ends, and flared skirts that fit over the ends and are secured to the barrel by means of annular discs. C.

Circular Seamless-Hose Knitting-Machine Racking Mechanism. Holcott Engineering Co. Ltd. and J. E. Draycott. B.P.643,520: Appl. 12/11/1947; Filing 21/12/1948; Publ. 20/9/1950. Means for controlling the length of the parallel spliced area in the foot portion of a lady's stocking when this is knitted on a circular machine having ratchet mechanism, comprises (1) a bluffing device, carried by the wheel for co-operating with the clawker to stop racking of the wheel automatically at a pre-determined stage in a complete revolution of the wheel; (2) pattern-controlled means for restarting the racking by displacing the bluffing means. C.

Straight-Bar Knitting-Machine Draw Mechanism. Mellor Bromley & Co. Ltd. and S. A. Monk. B.P.643,644: Appl. 11/7/1945; Filing 15/7/1946; Publ. 27/9/1950. The general object of the invention is to provide on a straight-bar knitting machine, particularly of the Cotton's Patent type, a mechanism by which one member moving to and fro may be given a constant lead over another member moving to and fro. A specific object is a construction of draw mechanism by which a carrier having a variable traverse may, irrespective of the length of the draw, be given a constant lead over a slur cock having a constant amplitude of traverse. Various details are covered in the 14 claims. C.

Straight-Bar Knitting Machine Plating Mechanism. Mellor Bromley & Co. Ltd. and Arthur Shortland. B.P.643,645: Appl. 3/8/1945; Filing 13/9/1946; Publ. 27/9/1951. The invention relates to a method of, and mechanism for, producing on a Cotton's Patent or other straight-bar knitting machine, plated fabric in which the plating extends only for a part of the width of the fabric. A main carrier and a plating carrier are traversed together, without either of them leading, for the distance necessary for the width of plating, and the main carrier is traversed beyond the plating carrier in the unplated width of the fabric. The requisite plating angle between the two yarns is secured by locating the carriers at different levels with respect to the length of the needle stems. Details are covered in the 16 claims. C.

Rayon Cake Adjustable Supports: Fonderie de Precision. B.P.643,711: Appl. and filing 9/10/1945; Publ. 27/9/1950; French appl. 27/2/1942. An adjustable

support for rayon cakes comprises a base on which at least two arms are mounted in supports that allow for the adjustment of the radial position of the arms in accordance with the dimensions and slope of the yarn package. Details are covered in the 14 claims. C.

Gripper Shuttle Loom. Zbrojovka Brno, Narodni Podnik (Brno Arms Factory, National Corporation), Vilem Werner and Karel Kubelka. B.P.643,741: Appl. and filing 10/9/1947; Publ. 27/9/1950; Czech appl. 20/9/1946. The claim is for a stationary weft supply loom of the gripper-shuttle type in which the shuttle is fixed to a flexible band that is driven along a closed path, passing through the warp shed, by means of two wheels that are spaced apart by the width of the shed. The length of the bands is shorter than the sum of the distance between the axles of the two wheels plus the circumference of one wheel. C.

Fashioned Stockings: Production. E. B. Beacham. B.P.643,759: Appl. and filing 5/1/1948; Publ. 27/9/1950. The claims relate to the production of a knitted stocking, having an oblong heel pocket with opposite cheeks respectively formed by complemental triangular upper and lower gores meeting in a diagonal suture, the fabric of each upper gore being narrowed by at least one needle loop in uniformly spaced courses, and each lower gore being widened by at least one needle in unequally spaced courses, some of which are spaced apart by a number of courses greater than the spacing of the narrowed courses in each upper gore. Better fitting, especially around the ankle, is secured in "single unit" or "round heel" stockings. C.

Running Yarn or Cloth Tension-Indicating Apparatus. English Electric Co., Allan Asbury and G. R. Wilson. B.P.643,775: Appl. 5/3/1948; Filing 7/3/1949; Publ. 27/9/1950. Apparatus for providing an indication dependent on the tension in material passing through a treating machine (for example, metal strip in a rolling mill, or a running yarn or woven fabric) comprises a member (A) that is engaged by the material and tends to be displaced towards the pass line of the machine, and an element (B) sensitive to liquid pressure interposed between (A) and a rigid support (C) so that the pressure applied to (B) is dependent on the component of force tending to displace (A). Element (B) comprises a deformable endless tube (D) filled with liquid, enclosed in an annular space between two rigid rings (parallel in plane to each other and to the length of the tube) coupled to (A) and (C) respectively, and capable of telescoping one within the other, whereby the tube is deformed when pressure is applied to (B). The tube (D) is connected through a capillary tube to means for measuring pressure, which may give a remote indication by the use of Selsyn transmitters. For indicating tension in woven fabric undergoing treatment, the member (A) extends across the full width. C.

Manually-Threaded Shuttle. Crossley Shuttles Ltd. and Frank Wilkinson. B.P.643,783: Appl. 6/5/1947; Filing 7/6/1948; Publ. 27/9/1950. The invention relates to various forms of a shuttle that cannot be threaded by "kissing". A slit in the top of the shuttle leads to a cavity that turns towards the front of the shuttle and communicates with a slit that runs into a delivery groove or aperture. Fixed in the cavity is a channel-like threading device, the rear end of one wall of which is preferably formed with a double or S-shaped bend. Details are shown in 16 figures. C.

Fully-Fashioned Hosiery Knitting-Machine Welt-Turning Implements. Wildman Manufacturing Co. B.P.643,802: Appl. and filing 29/2/1948; Publ. 27/9/1950; U.S.A. appl. 28/9/1939. The invention relates to welt-turning instruments in which the point of the hook is shielded against contact with the stitch when this is pushed down on to the knitting needle. C.

Two-Coloured Venetian Blind Ladder Tape. Russell Manufacturing Co. B.P. 643,873: Appl. and filing 30/7/1947; Publ. 27/9/1950; U.S.A. appl. 25/3/1939. The claim is for a method of applying colour to Venetian blind ladder tape, whereby by the use of a travelling mask in conjunction with a roll-printing device, the two main tapes present different colours. C.

Woven Fabrics. Aspinall Bros. (Huddersfield) Ltd. and S. Brierley. B.P. 650,027 of 14/2/1951. A fabric with maximum bulk and maximum air space and minimum weight has a double leno structure. It has a yarn density preferably equal to about 5 per cent. of the specific gravity of wool; the weights of warp and weft are approximately equal. W

Bobbin-Winding Machine. Barber-Colman Co. and Burt A. Peterson. U.S.P. 2,543,931: Appl. and filiing 26/5/1945; Publ. 6/3/1951. C.

Weaving Pile Carpets. L. H. Mackay and J. Mackay. U.S.P.2,544,338 of 6/3/1951. "Carved" effects obtained by cutting grooves, usually of V-section, in Chinese and other hand-made carpets, are simulated in machine-made carpets. The pattern is formed by providing the upper surface of the foundation with normal pile areas, pile-bare areas, and denser-than-normal pile areas. Each bare area has along part of its boundary a denser pile area formed by drawing a thicker mass of pile-forming warp yarn through each interstice of the denser pile area than is drawn through each interstice of a normal pile area. Advantages claimed are a more pronounced pattern and a better carved effect than that produced by known methods; the bare areas are less likely to show the foundation, the thinning-out effect at the edges of the pile-bare areas is avoided, and greater wearing qualities are secured. W.

Knitting Needle with Loop Retaining Attachment. E. L. Kadisch, *et al.* U.S.P.2,544,429 of 2/6/49:6/3/51. A knitting needle provided with an attachment which will hold the loop when knitting is stopped or interrupted. H.

Tube Frame for Axminster Looms. O. V. Payne (to Crompton & Knowles Loom Works). U.S.P.2,544,434/5 of 6/3/1951. A tube frame has a row of yarn tubes on each side, the rows being inclined towards each other so that their delivery mouths are arranged in a single line. There is room for enlarged yarn receiving mouths to allow the passage of large yarns or knots. The tube frame is reversible in transporting chains. W.

Anticreep Warp-Lifting Roller in Circular Weaving Looms. Société Saint Frères, Jean Rabeux and Raymond Jacob. U.S.P.2,544,766: Appl. and filing 26/1/1949 (in France 28/1/1948); Publ. 13/3/1951. C.

Automatic Filling Guide for Textile Looms. Chester N. Perry. U.S.P. 2,544,803: Appl. and filing 7/2/1949; Publ. 13/3/1951. C.

Knitting Machines: Two-step Tucking Device. J. N. Gilbreath. U.S.P. 2,544,829 of 8/2/49:13/3/51. A two-step tucking device for a knitting machine, enabling control of the needles so that one group may be made to hold loops or stitches, while two other groups of needles are operating. H.

Loom Reed. Excelsior Loom Reed Works Inc. and Arno Hornig. U.S.P. 2,544,882: Appl. and filing 12/2/1947; Publ. 13/3/1951. C.

Stop Motion for Jacquard Looms. Albert J. Bartson. U.S.P.2,545,065: Appl. and filing 1/3/1950; Publ. 13/3/1951. C.

Yarn Controlling Device. I. H. C. Green, assignor to Hemphill Co. U.S.P. 2,545,081 of 17/3/50:13/3/51. A yarn control device which will push yarns, that have become twisted whilst out of use, downward into the cylinder far enough for the yarn lever to drop the yarn into the needle-taking position without interference from another yarn. H.

Stop-Motion for Spring Needle Knitting Machines. E. Vossen, assignor to Stop-Motion Devices Corporation. U.S.P.2,545,324 of 16/8/49:13/3/51. A stop-motion for spring needle knitting machines is described which does not require that the yarn be guided up over high top detectors, but may need to extend only from the spools or cones directly to the feeds of the knitting machines. H.

Loom Shuttle. Steel Heddle Mfg Co. and John J. Kaufmann. U.S.P.2,545,427: Appl. and filing 4/12/1948; Publ. 13/3/1948. C.

Winding Machine. American Viscose Corporation and Joseph A. Truitt. U.S.P. 2,545,534: Appl. and filing 5/4/1948; Publ. 20/3/1951. C.

Reed for Circular Looms. H. Slowak. U.S.P.2,545,593 of 24/1/49:20/3/51. A reed for weaving on circular looms, in which the reed strips or dents are secured at one end only. H.

Balanced Weft Tension for Loom Shuttles. Crompton & Knowles Loom Works and Richard G. Turner. U.S.P.2,545,934: Appl. and filing 6/11/1948; Publ. 20/3/1951. C.

Unwoven Flexible Fabric. Fibre Products Laboratories Inc. and Esther R. Goldman. U.S.P.2,545,952: Appl. and filing 18/10/1946; Publ. 20/3/1951. C.

Warp Beam Stopping Mechanism. American Viscose Corporation and Ernest K. Bauer. U.S.P.2,546,141: Appl. and filing 27/8/1948; Publ. 27/3/1951. C.

Pile Wire and Method of Weaving Pile Fabrics. Magee Carpet Co. and Francis P. Groat. U.S.P.2,546,261: Appl. and filing 12/4/1948; Publ. 27/3/1951. C.

Chenille-Stitching Sewing-Machine Attachment. George D. Dedmon and Rad. F. Dedmon. U.S.P.2,546,357: Appl. and filing 6/10/1948; Publ. 27/3/1951. C.

Electric Weft Detecting System for Looms. Crompton & Knowles Loom Works and Victor F. Sepavitch. U.S.P.2,546,617: Appl. and filing 27/12/1948; Publ. 27/3/1951. C.

Looms: Mechanism for Starting and Stopping Weaving. Sulzer Frères and Erwin J. Pfarrwaller. U.S.P.2,546,833: Appl. and filing 4/12/1946 (in Switzerland 18/6/1943); Publ. 27/3/1951. C.

Covering Fabric for Umbrellas. William Grace. U.S.P.2,546,857: Appl. and filing 17/12/1949; Publ. 27/3/1951. C.

Machine for Weaving Loops into the Fabric during the Formation Thereof. Benjamin Kahn. U.S.P.2,547,824: Appl. and filing 26/10/1949; Publ. 3/4/1951. C.

Plain and Ribbed Fabrics: Machine and Method for Joining. T. A. Oliver, Jr. U.S.P.2,548,234 of 20/12/48: 10/4/51. A looping machine for joining knitted fabrics, consisting of alternately long and short pins so that the rear loops of the fabric can be impaled on the short pins and the front loops on the longer pins, thereby accommodating both plain and ribbed fabrics. H.

Picker Stick Hold-Down Device. Hoosac Mills Corporation and Harold Hoeber. U.S.P.2,548,432: Appl. and filing 28/1/1947; Publ. 10/4/1951. C.

Pneumatic Rapid Traverse for Winding Textile Yarns on Cones and Tubes. Eastman Kodak Co., Richard F. Dyer and Wendell G. Faw. U.S.P.2,548,523: Appl. and filing 12/10/1949; Publ. 10/4/1951. C.

Thread Cutter for Weft Replenishing Looms. Crompton & Knowles Loom Works and Gabriel C. Beatrice. U.S.P.2,549,285: Appl. and filing 27/12/1948; Publ. 17/4/1951. C.

Knitting Striped Fabric: Apparatus. S. Mishcon, *et al.*, assignors to Supreme Knitting Machine Co. U.S.P.2,549,701 of 15/4/49: 17/4/51. Apparatus which will, in the knitting of striped fabric, effectively and conveniently hold the non-knitting yarn, and automatically cut the discontinued knitting yarn. The device is adapted for positioning inside the cylinder, and can be readily connected to the multiple feed striping box. H.

Harness Stop Motion. Bachmann Uxbridge Worsted Corporation, Wilfred G. Jasmin and Lester G. Herlihy. U.S.P.2,550,195: Appl. and filing 15/6/1949; Publ. 24/4/1951. C.

Shuttle Tip. Crompton & Knowles Loom Works and Alexander C. Krukonis. U.S.P.2,550,273: Appl. and filing 30/12/1948; Publ. 24/4/1951. C.

Shuttle Replenishing Mechanism. Ivano Mulatti and Luigi Cremonini. U.S.P. 2,550,287: Appl. and filing 11/12/1948 (in Italy 15/12/1947); Publ. 24/4/1951. C.

Yarn Tensioning Device for Winding Machines. Barber-Colman Co., George M. Brainerd and Amiee Vachon. U.S.P.2,550,448: Appl. and filing 5/9/1947; Publ. 24/4/1951. C.

Knitted Fabric. E. St. Pierre, assignor to Hemphill Co. U.S.P.2,550,880 of 20/3/48: 1/5/51. Method of binding the end of a yarn into a circular knitted fabric to prevent longitudinal slipping, when the use of the yarn is begun or discontinued, without splicing to another yarn. H.

Knitted or Woven Fabrics of Synthetic Polyamide Fibres: Apparatus for Forming Designs. F. G. Weisbecker, assignor to Perforations, Inc. U.S.P. 2,550,893 of 29/11/47: 1/5/51. Method for forming designs in knitted or woven nylon fabrics by subjecting the fabric, which is stretched across the apparatus, described in the previous patent, to pre-boarding treatment. H.

Knitted or Woven Fabrics of Synthetic Polyamide Fibres: Method for Forming Designs. F. G. Weisbecker, assignor to Perforations, Inc. U.S.P. 2,550,894 of 17/3/50: 1/5/51. Apparatus for forming a design in knitted or woven nylon fabrics without having to use printing inks, *etc.* H.

Filamentary Tubular Article and Method of Producing the Same. Riverside Mills and Ralph R. Cone. U.S.P.2,551,098: Appl. and filing 10/1/1946; Publ. 1/5/1951. C.

Shuttle for Electronic Loom Protection. Crompton & Knowles Loom Works and Victor F. Sepavitch. U.S.P.2,551,172: Appl. and filing 6/12/1949; Publ. 1/5/1951. C.

Thread Control for Weft Replenishing Looms. Crompton & Knowles Loom Works and Walter H. Wakefield. U.S.P.2,551,189: Appl. and filing 1/2/1947; Publ. 1/5/1951. C.

Knitting Machines: Yarn Severing and Clamping Mechanism. E. F. Miller, assignor to Hanes Hosiery Mills Co. U.S.P.2,551,385 of 22/3/48: 1/5/51. A yarn severing and clamping mechanism for circular knitting machines. H.

Weaving Looms [Improved Means for Driving, Stopping, and Reversing Heavy Looms]. Thomas Hindle. U.S.P.2,551,492: Appl. and filing 3/6/1948 (in Gt. Britain 13/6/1947); Publ. 1/5/1951. C.

4—CHEMICAL AND FINISHING PROCESSES

(B)—Boiling, Scouring, Degumming and Washing

Wool Scouring: An Experimental Machine. H. H. Webber. *Bull. Lowell Text. Inst.*, 1950, Series 54, No. 2, 8 pp. The machine is a laboratory model, and has a production capacity of 20-25 lb. of clean wool per hour. The machine has four bowls, with a total power consumption of ¾ h.p. per bowl, overflow, counter-flow, and liquor recirculating systems, and a rake conveyor. A pneumatic control applies pressure to the squeeze rollers. Heat is applied to each bowl by means of electric strip heaters. Effluent can be collected separately from individual bowls. Photographs, and an engineering drawing of the apparatus are given. W—4B.

Detergency. (I) Low Temperature Scouring of Greasy Wool. W. W. Mansfield. *Austral. J. Appl. Sci.*, 1950, 1, 330-347. Soap-soda scouring of greasy wool is difficult below 40° C., as the removal of wool wax from the fibres is hindered by the high viscosity of the wax. The addition of a small amount of an emulsified solvent to the detergent solution enables scouring to be accomplished at room temperatures. The influence of each of a number of factors on the detergent efficiency of such an emulsion has been determined, and the mechanism of the detergent action is discussed. W—4B.

Scouring: An Analytical Survey of the Problems. R. L. Elliott. *Text. Rec.*, 1951, 68, No. 817, 102-104. Problems connected with the removal from wool of soluble salts, insoluble dirt, wool grease, and processing oils are surveyed. The functions of soap and of synthetic detergents are briefly discussed. W—4B.

Petroleum Chemicals in the Textile Industry. J. A. Hepworth. *J. Rossendale Text. Soc.*, 1950-51, pp. 8-16. Textile applications are described of by-products derived from the refining of petroleum. W—4B.

Scouring. ("Continuous Centrifuge Improves Continuous Solvent Scouring, Depainting Process.") *Amer. Wool & Cotton Rep.*, 1951, 65, No. 18, 9-10, 50-51. Improvements have been made in Hoffman's "Fialasol" process (*J. Textile Institute*, 1950, 41, A179). Flushing units have been inserted between the roller units. The continuous alternation of soaking, scrubbing, squeezing and flushing makes rinsing in water unnecessary, and therefore obviates felting and nep formation. A continuous centrifuge extracts sufficient solvent to allow the wool to proceed directly to the cards without drying. A schematic drawing of the cleaning unit is given. W—4B.

Wool Scouring and Cleansing. *Wool Rec.*, 1951, 79, 1493-1494, 1584, 1587, 1677. An account is given of the types and properties of soaps used in wool scouring, and of scouring assistants with special applications. Suggestions are made for precautions to be observed in using soap for scouring dyed goods, for milling, and for preparing goods for dyeing and printing. W—4B.

Wool Scouring. C. R. Wilkinson. *Dyer*, 1951, **105**, 627-629, 691-692. A report of a lecture, describing the oils used for worsted, fine woollen, carpet, and mohair yarns, yarn scouring machines, and the factors involved in emulsion scouring. The advantages of synthetic detergents are described, with particular reference to the replacement of sodium chloride by a phosphate builder, *e.g.* tetrasodium pyrophosphate; the effect of temperature and *pH*, and the question of physical dirt removal are also discussed. The use of alkali in the scouring of yarn dyed in oil is criticised, and a neutral scour using a synthetic detergent is advocated, provided the yarn is not acid from the dye bath. In saponification scouring of yarn, the addition of a synthetic detergent prevents the formation of lime soaps, and ensures complete removal of the olein soap in the rinsing baths. A method of cheese scouring, using a standing bath, is described. W—4B.

Scouring and Milling: Twenty-five Years of— J. C. Schofield. *Scottish Woollen Technical College Year Book*, 1950, 65-74. Subjects discussed are:—standard woollen and worsted type scours; unsolved problems of scouring; mechanical factors in scouring; the use of auxiliary products in scouring; problems of milling, with particular reference to the function of soap. Details are given of the performance of a continuous washing-off machine for scouring and for washing-off compared with the performance of the dolly. The results of tests are given which show the advantages of full-width treatment. W—4B.

(D)—Milling

Wool Felting: Mechanics. R. W. Moncrieff. *Text. Mfr*, 1951, **77**, 105-110, 117, 157-161, 199, 242-245. A critical review of theories which attempt to explain the mechanics of wool felting. W—4D.

Scouring and Milling: Twenty-five Years of— J. C. Schofield. See section 4B. W—4D.

Milling: Comparisons in Methods. T. H. Sedgwick. *Text. Merc.*, 1951, **125**, 29-31. Comparative figures are given for shrinkage, strength and elongation of fabrics produced by grease, acid, and soap milling. Suggestions are made for the operation of the different methods and for the use of fuller's earth. The advantages, disadvantages and spheres of application of each method are given. W—4D.

(E)—Drying and Conditioning

Drying Package-Dyed Yarns. J. A. D. Hall. *Dyer*, 1951, **105**, No. 8, pp. 521-523. A description is given of the ADLT package-drying machine manufactured by Obermaier & Cie of Germany. With this machine, drying is effected by blowing hot air or steam through the yarn packages in two stages—firstly from the outside of the material to the inside, and then finally in the reverse direction. C—4E.

G)—Bleaching

Bleaching Cotton and Flax: Certain Questions Concerning the Chemistry. P. P. Viktorov. *Tekstil. Prom.*, 1950, **10**, August, pp. 24-26, September, pp. 31-33 and November, pp. 31-33 (through *J. Soc. Dyers Col.*, 1951, **67**, No. 4, pp. 164-165). Three questions concerned with textile bleaching are considered: (1) Why does green flax fibre, prepared mechanically, respond more readily to the bleaching process than fibre prepared by biochemical treatment? It is suggested that one reason may be that the natural pigments have a catalytic effect on the oxidation of cellulose. In the retting process these pigments undergo polymerisation and oxidative condensation reactions, and form rubber-like substances which cause lower wettability than is found with green flax. Also, the structure of green flax fibre is more open than that of retted flax, and is therefore more accessible to reagents. (2) What is the nature of the substances which react with the active chlorine in a pre-kiering bleach and what are the reasons for the high chlorine consumption? The odour produced during bleaching is attributed to chloroamines (probably chlorogenic acid) which arise from nitrogenous matter that is readily removed if treated with acid prior to bleaching. (3) Why does kiering with lime yield a higher degree of whiteness on cotton and linen fabrics than does kiering with caustic soda or with a mixture of caustic soda and sodium bicarbonate? The poorer white in these latter cases is attributed to absorption by the fibre of some of the colouring matter that forms during the boil and causes the liquor to become brown. Tests were made on this colouring matter, but its origin has not yet been ascertained. C—4G.

Chlorine Bleach: "Danger Zone". E. A. Shilov and A. A. Yasnikov. *Tekstil. Prom.*, 1950, **10**, November, pp. 35-38 (through *J. Soc. Dyers Col.*), 1951, **67**, No. 4, p. 165). A summary is given of work by Shilov and co-workers on the kinetics of the oxidation of various organic substances, including cellulose and dyes, by hypochlorite solutions over a wide range of *pH*. C—**4G.**

(I)—DYEING

Instrumentation: Sizing, Dyeing, Tentering and Finishing. E. A. Bentley. *Text. Industr.*, 1951, **115**, No. 1, pp. 126-129. An illustrated account is given of the instrumentation system used by an American company for the automatic control of sizing, dyeing, tentering, and finishing operations. C—**4I.**

Glass Fabrics: Dyeing, Printing and Finishing. R. F. Coroselli. *Text. Industr.*, 1951, **115**, No. 1, pp. 107-109. Brief details are given of processes for the dyeing, printing, and finishing of glass fabrics. C—**4I.**

Maori Textile Techniques. Walter G. Fischel. *Ciba Review*, 1951, No. 84, February, pp. 3034-3040, 3043-3046, 3048-3054, 3057-3059. *Ciba Rdsch.*, 1950, No. 90, pp. 3320-3345. In German. After discussing the probable origin and dates of settlement of the Maori tribes in New Zealand, the author goes on to describe their culture, clothing, textiles techniques and dyeing processes. Containers, cooking vessels and clothing were based on plaited fabrics, the fineness of which, of course, depended on the ultimate use of the material. The mode of including coloured effects is described in detail. Twenty references are given. C—**4I.**

Vat-Dyeing of Cotton. J. A. Fowler, A. G. H. Michie and T. Vickerstaff. *Melliand Textilber.*, 1951, **32**, No. 4, pp. 296-302. In German. In investigating the vat-dyeing of cotton on a physico-chemical basis, the authors have found that, thermodynamically, dyeing with leuco vat-dyes is identical with direct dyeing, in that the adsorption of dyestuff anions by the fibre is involved. The principal practical difference lies in the higher electrolyte concentration of the vat-dyeing process. The article gives data on the behaviour of certain vat-dyes, including their affinities for cotton. C—**4I.**

Wool-Dyeing With Acid and Substantive Dyes: History and Modern Developments. H. G. Fröhlich. *Meliand Textilber.*, 1951, **32**, No. 4, pp. 307-311. In German. A historical account of the theory of acid and substantive dyeing of wool includes the development of Elöd's work in this field. The author discusses the nature of the difference in dyeing properties of wool, silk and synthetic fibres. C—**4I.**

Wool Union Cuprophenyl Dyes. J. R. Geigy, A.-G. *Textil-Rundsch.*, 1951, **6**, No. 3, pp. 116-122. In German. The author describes the cuprophanyl range of dyestuffs for wool/cotton and wool/rayon unions. The dyeing properties of individual dyes are discussed and a coloured reproduction of dyeings on wool and rayon staple is included, as are three sample dyeings on wool/rayon union men's suitings. The article deals with modes of application and stripping, fastness, and suitable applications. C—**4I.**

Aqueous Dyeing of Fiber V. E. I. du Pont de Nemours. *Du Pont Tech. Bull.*, 1950, **6**, No. 3, pp. 146-154. Up to the present time only dispersed acetate colours have been applied on a large scale to Fibre V (Dacron) by aqueous dyeing methods. Either the continuous filament or staple form of this fibre can be dyed with acetate colours in currently available equipment, as rawstock, yarn, or fabric. While satisfactory light to medium shades can be applied at atmospheric pressure with no assistant, it is recommended that dyeings be made by using a carrier, or in the case of rawstock, top, or yarn, a dyeing temperature of about 250° F. Many existing machines can be modified to withstand the pressure involved in attaining such temperatures. Typical dyeing cycles are given for Fibre V staple using a carrier, Fibre V filament or staple under pressure, and Fibre V filament fabrics in a jig or beck. The article includes a diagram of the Smith-drum 1 lb. package machine, a table showing comparative absorption of ten dyes, and some colour recommendations. C—**4I.**

Dyeing "Ardil". J. Henderson. *Dyer*, 1951, **105**, No. 9, pp. 557-562. The processes involved in the production of "Ardil", and the properties of this regenerated protein fibre, are outlined. The author then examines the suitability of the main types of dyestuffs for the dyeing of "Ardil" and "Ardil"-

containing materials. The dyes considered are (1) level dyeing acid dyestuffs, (2) acid milling dyestuffs, (3) direct dyes, (4) pre-metallised dyes, and (5) chrome dyes. C—4I.

Dyeing Irregular Viscose. J. Henderson. *Dyer*, 1951, **105**, No. 11, pp. 715, 717, 719, 721. The main causes of uneven dyeing of viscose rayon fabrics are described, and some of the methods for covering these faults are discussed. Three sources of irregularities in dyeing are considered, namely, (*a*) the manufacture of viscose rayon fibres, (*b*) spinning and weaving, and (*c*) preparation of the fabric prior to dyeing. C—4I.

Dyeing of "Orlon" Acrylic Fiber. E. I. du Pont de Nemours. *Du Pont Tech. Bull.*, 1950, **6**, No. 3, pp. 155-159. Dispersed acetate and vat colours are recommended for dyeing Orlon. On piece goods, the acetate dyes are valuable for obtaining pastel to medium shades in jig and beck equipment at 212° F. and by Thermosol (see *J. Textile Institute*, 1949, **40**, A509) application; these colours have good wash fastness, and light fastness suitable for underwear, *etc.* On Orlon yarn, pressure dyeing at 250° F. yields level shades of good depth, although exhaustion efficiency is low. Insoluble vat colours, dyed at 212° F. on the jig, produce a wide range of shades, but black, brown and maroon are obtained only with high concentrations of caustic and result in some damage to the fibre. Soluble vat colours are applied by padding fabric with the dye and sodium nitrite, followed by treatment at 200° F. on the jig with hydroxyacetic acid; this process results in level light shades with good light and washing fastness, suitable for shirting. Insoluble vat dyes applied to yarn under pressure at 250° F. give fast shades suitable for outdoor uses such as in awning fabrics. The article gives procedures, and lists of suitable acetate and vat dyes, for dyeing Orlon fibrestock at 212° F., and under pressure. (See also *J. Textile Institute*, 1951, **42**, A309.) C—4I.

Fast Dyeings on Nylon Textiles. G. T. Douglas. *J. Soc. Dyers Col.*, 1951, **67**, No. 4, pp. 133-137. This paper is substantially the same as one by the same author in *The American Dyestuff Reporter*, summarised in *J. Textile Institute*, 1951, **42**, A310. C—4I.

New Products [Dyes]. E. I. du Pont de Nemours. *Du Pont Tech. Bull.*, 1950, **6**, No. 3, pp. 111-116. The new dyes described are (1) Neutracyl Red B, (2) Celanthrene Violet BGF, and (3) Celanthrene Fast Blue 2G. It is claimed, for (1), that it has the best light-fastness obtainable on nylon, and that its neutral dyeing properties enable wool to be dyed without danger of damage from the use of sulphuric acid. Violet shades resistant to gas-fume fading are produced by (2) on acetate rayon and nylon, and the fastness to light, washing, *etc.*, is good. It is a direct dyeing acetate colour, and gives good speck-free prints. The third dye produces bright, non-subliming aquamarine shades of good fastness, and can be used as a neutralising component for blue and violet combinations that flare red. Tables give details of the fastness ratings of the dyes on various fibres, and of the application properties and rate of absorption. C—4I.

"Orlon" Acrylic Fiber, Nylon and Fiber V as Effect Threads. E. I. du Pont de Nemours. *Du Pont Tech. Bull.*, 1950, **6**, No. 2, pp. 92-109. Since Fiber V (Dacron) and Orlon show no affinity for acid dyes, and since nylon can be made resistant to many acid and chrome dyes by treatment with tannic acid, tartar emetic and stannous chloride, the possibility of using these fibres as effect threads has been investigated. It is concluded that Orlon can be used as a white effect thread in worsteds piece-dyed with Chromacyl (Special Acid) or chrome colours, and that it resists staining by direct cotton and dispersed acetate dyes, but that except for light ground shades, it cannot be used as a white effect in cotton piece goods dyed in steam development. Acetate-dyed and undyed Fiber V yarns were only slightly stained by the six vat dyes applied by the pad-steam process and by the pad-jig process, and this fibre resists staining by acid colours when nylon/Fiber V combination fabrics are dyed. Dyed nylon yarns made resistant with Mordant BS make an effect in cotton fabrics vat-dyed by jig-development, but are stained by steam-development. C—4I.

Pad-Steam Dyeing of Nylon with Acid and Direct Colours. E. I. du Pont de Nemours. *Du Pont Tech. Bull.*, 1950, **6**, No. 3, pp. 160-169. This article deals with an improved pad-steam process for dyeing acid colours on nylon piece goods, using a solvent, thiourea, ammonium sulphate, and gum. Steaming time required

for fixing the colour varies (according to colour) from ten to fifteen minutes. The fastness properties of colours produced by this process are equal to those of dyeings made by conventional methods, and there is considerably less warp-streakiness. A gum concentration of 10 parts/100 was the most satisfactory, and hexylene glycol is recommended as the best organic solvent. It was found that the dyes could be fixed in steam atmospheres of varying quality. A table gives data relative to the application of a number of dyes by the pad-steam method. C—4I.

Dyeing Wool Stock, Tops, and Yarns. R. W. Joerger. *Text. Industr.*, 1950, 114, No. 4, 130-137, No. 5, 119-125, No 7, 97-100, No. 8, 125-219, No. 10, 145-149, 193, No. 12, 115-118. Machinery for dyeing and drying wool in loose and spun forms is illustrated and described. The effect of wool quality and of chemical treatments on dyeing is discussed. Details are given of the properties and methods of application of acid, chrome, and vat dyes. W—4I.

Wool Dyeing Practice. ("Die Praxis der Wollfäberei.") K. Wojatschek. *Melliand Textilber.*, 1951, **32**, 149-154. The following aspects of practical wool dyeing are discussed: fibre protective agents; preliminary treatment of the goods to be dyed, including stripping; dyeing of wool with acid dyes, acid chrome-complex dyes (*e.g.* Palatine Fast dyes), chrome and mordant dyes, and vat dyes; dyeing of wool at various stages of manufacture. W—4I.

Wool Stock: Handling in Dyehouse. *Text. Industr.*, 1951, 115, No. 5, 112-114. An American mill's reorganisation of its dyehouse is described. Floor trucks have been eliminated by installing a monorail ceiling conveyor, which has a weighing section. Scoured wool is loaded into bags which are then weighed and transported to the dye kettles, into which they are emptied and returned to the filling point. The baskets holding the dyed stock are raised by electric hoist, and conveyed past a switching station on the monorail system to a floor pit for automatic delivery to squeeze rollers. The stock is then blown to a dryer, and finally to an automatic bagger. W—4I.

Fibres: Dye Absorption. A. J. Hall. ("Fibres and Fabrics. 6. The Influence of Fibre Roughness in Dyeing.") *Hosiery Times*, 1951, **24**, (266), 51-4. Discusses the influence of fibre roughness and fibre surface area on the absorption of dyestuffs, with particular reference to the dyeing of cotton-acetate rayon fabrics and the staining of wool. H—4I.

Dacron: Dyeing. *Hosiery Industry Wkly*, 1951, **59**, (26), 3. Note on the manufacture of Amidye, a new dye assistant for Dacron, by the Amalgamated Chemical Corporation, Pa. Amidye is a solution of sodium salt combined with suitable active agents. H—4I.

Nylon Hose: Stripping Process. H. White. ("Stripping nylons in the hosiery dye house.") *Hosiery Underwear Rev.*, 7/51, **34**, (7), 147-50. Describes a stripping procedure for 15 denier nylon stockings. H—4I.

(J)—PRINTING

Coprantine Colours for Furnishing Fabrics. E. Krähenbühl. *Ciba Review*, 1950, No. 83, pp. 3029-3030. A very brief indication is given of the method for printing Coprantine colours on to furnishing fabrics. Essentially a small addition of caustic soda is made to the printing colour and urea. The prints are fixed by steaming and after-treated with copper, and this gives fastness to light and washing frequently superior to that of chrome colours. A supplementary folder gives recipes for various shades and a large specimen of seven-colour roller printing. C—4J.

Lyofix A for White and Coloured Effects in Cotton Materials. CIBA, Soc. Anon. *Ciba Review*, 1950, No. 83, p. 3029. The article describes the conditions which are necessary for applying Lyofix A in order to obtain two-colour effects in an all-cotton fabric. C—4J.

Wool-Dyeing With Acid and Substantive Dyes: History of Theory. H. G. Fröhlich. *Melliand Textilber.*, 1951, **32**, No. 4, pp. 307-311. In German. After a brief indication of earlier theories regarding the dyeing of wool with acid dyes, the paper discusses the work of Elöd and his co-workers on the nature of the process involved in dyeing wool, silk, and polyamide fibre with acid and substantive dyes. C—4J.

Printing Cotton Fabrics with Direct Dyes. V. Rostovtsev. *Tekstil Prom.*, 1950, **10**, pp. 26-28 (through *J. Soc. Dyers Col.*, 1951, **67**, No. 4, p. 167). Fast, bright prints of direct dyes may be obtained by addition to the printing paste of a solution obtained by adding caustic soda to copper sulphate solution in the presence of glycerol. After steaming, the print is passed through a hot solution of Fixer DCU (dicyandiamide-formaldehyde condensate). Alternatively, the dye may be printed with dicyandiamide, ammonium chloride, triethanolamine, and formaldehyde. In this case the fabric, after steaming, is passed through a hot solution of Fixer DCM (copper derivative of DCU). The second method yields the brighter results. C—4J.

Stencil-printed Motor Rugs. *Dyer*, 1951, **105**, 757-759. The stencil-printing of mohair pile motor rugs is described. Details are given of the dyes and thickeners used. The thickeners help to increase the natural lustre of the mohair, if applied in conjunction with pressure steaming. Methods of using various types of zinc stencil plates, and of obtaining sombre effects, are described. The colours are fixed by steaming, and the goods are finally washed to remove loose colour. W—4J.

(K)—FINISHING

Acetate Rayon: Delustring. R. J. B. Marsden and A. R. Urquhart. *J. Textile Institute*, 1951, **42**, No. 2, pp. T15-78. The first part of this paper describes a series of experiments carried out on a scale intermediate between ordinary laboratory work and technical practice, on the changes in strength and lustre of acetate rayon fabrics submitted to the normal delustring process. The effects of variations in duration of treatments, of the nature, concentration and temperature of the constituents of the delustring bath, and of the presence of sizing materials, have been examined in considerable detail for several brands of acetate rayon. The results are presented in a series of tables and graphs. A study has also been made of certain pre-treatments which lead to accelerated delustring under given conditions, and of some of the conditions of relustring. Some defects associated with differences in lustre are discussed. The second part is theoretical and deals with the mechanism of delustring. Two appendices cover the determinations of phenol and cresol in delustring liquors. (This work was completed in 1942 and contains no reference to work done since that year.) C—4K.

Collagen Structure: Mineral Tanning. Th. Schachowskoy. *Melliand Textilber.*, 1951, **32**, No. 4, pp. 302-307. In German. After briefly surveying the essential constitution (component amino acids) and properties of collagen and indicating its close similarity to the animal and synthetic fibres (wool, silk and nylon), the author goes on to discuss the mechanism of the tin-weighting of silk, and mineral tanning with various metallic salts and salt complexes, in general. C—4K.

Swell-Proofing Finishes: Evaluation. Part II. M. Münch. *Textil-Praxis*, 1950, **5**, No. 6, pp. 366-369. In German. The physical and chemical aspects of the swelling of cellulosic fibres in alkali hydroxide solutions are discussed. Cotton swells up to a limit of 40 per cent., whereas rayon swelling is unlimited, that is, solution takes places. This phenomenon indicates a fundamental difference in the structures of the fibres. (For Part I, see *J. Textile Institute*, 1949, **40**, A470.) C—4K.

Swell-Proofing Finishes: Evaluation. Part III. M. Münch. *Textil-Praxis*, 1950, **5**, No. 7, pp. 438-441. In German. The author reviews methods of reducing swelling of cellulosic fibres by screening or inactivating the hydroxyl groups. Impregnation and/or coating of the fibres with, for example, rubber or urea-formaldehyde resin, is not very successful owing to poor wash-fastness, the "protecting" particles being too coarse to be held by the secondary valencies of the cellulose. No detailed opinion can yet be expressed on the efficiency of more recently employed resins. Modification of fibre structure during rayon manufacture has been found to be effective, and heat treatment of the fibre brings about further improvement without impairing other properties. This phenomenon is compared to a natural process which occurs in cotton some weeks after maturing. Chemical methods of inducing swelling resistance by inactivating the hydroxyl groups include esterification, etherification and formalising. The chemical and physical significance of formalising, and its technological application, are fully discussed. (See also previous abstract.) C—4K.

Calendering. *Modern Plastics*, 1950, **28**, No. 2, pp. 88-91, 168, 172. Calenders used in the manufacture of Vinyl film or sheet are described and illustrated. The latest models can produce 4-mil film at a rate of from 80 to 100 yards a minute, and if properly adjusted will produce film which has no belly, no variation in thickness, no stretch, and a finish of good appearance. C—**4K.**

Nip Accidents on Horizontal Two-Roll Mills: Historical Survey. R. W. Lunn. *India-Rubber J.*, 1951, **120**, No. 14, pp. 7-8, 10-12; No. 15, pp. 11-15. An historical survey is made of safety codes and devices that have been designed to prevent nip accidents on roller milling machines and calenders used in the rubber industry. C—**4K.**

Resin Treatments: Effect on Spun Rayon Dyed with Direct Colours. E. I. du Pont de Nemours. *Du Pont Tech. Bull.*, 1950, **6**, No. 3, pp. 120-127. The tests on spun rayon described here complete the evaluation of urea formaldehyde and melamine resin treatments on direct dyes, begun in the du Pont *Bulletin* of October 1945. In most cases dealt with in this article, wash fastness was improved, but light fastness reduced. Detailed experimental data are given, and a table shows the effect of the two treatments on the light and washing fastness of some sixty dyes. C—**4K.**

"Zelan" AP Paste and "Aridex" L Conc.: Effect on Dyed Nylon. E. I. du Pont de Nemours. *Du Pont Tech. Bull.*, 1950, **6**, No. 4, pp. 209-218. Zelan AP Paste and Aridex L Conc. were applied to nylon which had been dyed with Chromacyl, chrome and direct colours, to determine whether the shade of any of the dyes, or their fastness to light and rubbing, would be affected. Results are listed for some fifty dyes. In some cases the shade of colours was altered slightly, but there appeared to be no effect on fastness to light or rubbing. C—**4K.**

Formaldehyde Treatments [of Cotton]. A. J. Hall. *Text. Merc.*, 1951, **124**, No. 3238, pp. 711-712, 714; No. 3239, pp. 765, 767. In the first part of this paper the author deals briefly with early and recent investigations on the reaction between formaldehyde and cotton cellulose. The changes produced by formaldehyde treatment in the properties of both untreated and mercerised cotton yarn are indicated. The second part of the paper is concerned with the effects of formaldehyde treatment on the dyeing properties of cotton. Experiments are described which illustrate the important influence that water has on these effects, when it is present either in the cotton or in the reaction mixture. Combination of cotton fibres with a very small proportion of formaldehyde can produce a marked resistance to dyeing, and Goldthwait's explanation of this in terms of cross-linkage between cellulose chains is briefly discussed. C—**4K.**

"Zeset" S. E. I. du Pont de Nemours. *Du Pont Tech. Bull.*, 1950. **6**, No. 3, pp. 134-145. Zeset S is a condensable aliphatic cyclic compound in the form of a colourless liquid, miscible in all proportions with cold or warm water by simple mixing, and forming an indefinitely stable bath prior to the addition of a condensation catalyst; after the addition of the catalyst the bath is stable for three days at room temperature. The product gives a crease and shrink-resistant finish to fabrics composed mainly of cellulose fibres. It is easy to apply, lasts well, and gives a strikingly soft handle. It can be used in combination with other agents, for example, to give viscose rayon the hydrophobic properties and resilience of wool. A full account of the behaviour of the finish is given, and a detailed description of the method of application. C—**4K.**

Shrink-resistance of Men's Half-Hose: Comparative Tests. J. R. Stewart. *J. Soc. Dyers Col.*, 1951, **67**, 138-141. The relative effects of 4 shrink-resisting processes on yarns and socks have been evaluated. After dyeing, the yarns were tested for the extent of chemical and physical modification of the wool, and the socks for serviceability in wear. The heels and toes of the socks were reinforced with nylon yarn. Considerable differences in the effects of some of the processes were found. Simplicity of application appears to be one of the major considerations desirable in works practice. W—**4K.**

Dyeing and Finishing of Worsted Pieces. J. M. Goodall. *J. Rossendale Text. Soc.*, 1950-51, pp. 38-43. The processes of crabbing, scouring, milling, dyeing, tentering, cropping, blowing, shrinking, and pressing are briefly described. W—**4K.**

Cashmere Goat Hair. *Rev. Text.*, 1950, 48, 67-68. Methods for scouring, hydrogen peroxide bleaching, and dyeing cashmere goat hair are given. W—4K.

Finishing of Face Cloths, Pile Fabrics, etc. A. I. Read. *J. Textile Institute*, 1951, 42, P205-P208. A brief summary of wet and dry finishing processes applied to face cloths with a raised surface and pile fabrics. W—4K.

Continuous Finishing of Woollens. *Text. Industr.*, 1951, 115, No. 5, 153-154. A description is given of machinery in an American mill for the continuous finishing of woollen fabrics after milling. The plant comprises a 6-bowl continuous washer followed by a detwister, scutcher, squeeze roll, dryer, 3-blade shearer, press, spray, sponger and decater. Pieces for carbonising are removed from the line after drying, and after carbonising and dyeing are returned to the detwister. W—4K.

Colour Changes in Wool During Processing. E. P. Mersereau and L. W. Rainard. *Text. Res. J.*, 1951, 21, 239-247. Colour is an important physical property of wool fibres which can be defined with the aid of colour-measuring instruments. The colour of a fibre is a limiting factor in the range of shades into which the fibre can be dyed. Colour changes which occur to the wool substrate itself during normal processing steps, such as scouring, carbonising, bleaching, dyeing, steaming, drying, and others, are significant in terms of the resulting limitations imposed on the shades obtainable. The size of the reflectance-level changes occurring in these processes is given and related to changes in utility and value of the fibre. W—4K.

Pre-shrinking of Fabrics. Associated Mill Products Ltd. *Text. Merc.*, 1951, 124, 979, 981. In the Emerson wool cloth shrinking machine, fabric is overfed at a calculated differential on to a steaming conveyor through a specially designed chamber which induces uniform relaxation. The fabric is dried by a Metrovick infra-red element projector, and then is cold-set by high velocity air impact. The correct amount of moisture is removed in 4-5 seconds. The cloth requires no recuperation; garments made from cloth pre-shrunk in this way do not shrink under Hoffman pressing. W—4K.

Nylon Hosiery: Finishing. ("New hosiery finish.") *Hosiery Industry Wkly*, 1951, 59, (22), 3, 14. Note on "Vibralon", a new nylon finish produced by W. F. Fancourt Co. which is reported to give nylon stockings a lasting, rich dullness and helps improve not only the appearance but the quality and comfort of wear. H—4K.

(L)—PROOFING

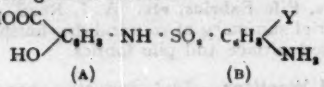
***Ryania* as an Insecticide.** *Col. Plant & Animal Prod.*, 1950, 1, 242-243. The stem wood of the shrub *Ryania speciosa*, a native of Trinidad, yields an insecticide which, in laboratory tests, has a significant toxic effect against various insect species, including the black carpet beetle and the webbing clothes moth. Merck & Co. have isolated an alkaloid (ryanodine) from the shrub. There is no information that trials of a commercial nature have been carried out with *Ryania* in the United Kingdom. W—4L.

Fabres: Waterproofing. A. J. Hall. ("Fibres and Fabrics. 3. Use of Emulsifying Agents for Waterproofing.") *Hosiery Times*, 1951, 24, (263), 51-2. Discusses the use of emulsifying agents for waterproofing. H—4L.

PATENTS

Cloth Sample Drying and Conditioning Machine. Rodney Hunt Machine Co. B.P.642,132: Appl. and filing 18/7/1947; Publ. 30/8/1950; U.S.A. appl. 4/12/1942. The invention relates to a machine whereby cloth samples, such as those taken in the course of a dyeing operation, can be dried very quickly, for instance in about 3½ minutes for heavy Melton cloth. The samples are mounted on a rotor that turns, at high speed in a heated enclosure, on a movable support by means of which the rotor and samples can be located within the enclosure (for drying) or outside it (for conditioning). The enclosure has an opening and two doors rotate with the rotor support, one serving to close the opening when the rotor is outside and the other when the rotor is inside. C.

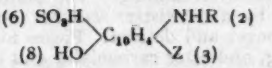
Metallisable Mono-Azo Dyes. J. R. Geigy A.-G. B.P.642,171: Appl. and filing 19/12/1947; Publ. 30/8/1950; Swiss appl. 20/12/1946 and 13/8/1947. A diazotised amine of the general formula



.....(I)

(A) (B)

is coupled in an acid medium with an aminohydroxynaphthalenesulphonic acid of the type



.....(II)

The substituent Y in the benzene nucleus B (formula I) is a sulphonic acid group, a benzenesulphonyl radical or a lower alkylsulphonyl radical, in *ortho* position with respect to the amino (and therefore the azo) group. Nucleus A may contain other common substituents. In formula II, Z stands for H or a sulphonic acid group. The examples refer to bluish-red chrome prints on cotton and bluish-red dyeings on wool that are scarcely altered in shade by after-chroming. C.

Insoluble Azo Dyes: Production. General Aniline and Film Corporation (Assignees of W. H. von Glahn). B.P.642,329: Appl. and filing 2/9/1947; Publ. 30/8/1950; U.S.A. appl. 27/3/1946 and 24/2/1947. The claims are for the use of compounds having active methylene groups as coupling components in the production of a series of insoluble azo dyes with 5-chloro-2:4-dimethoxy-aniline as the base for diazotisation. The following are cited: diacetoacet-*o*-tolidide, 2:4-dimethylacetoacetanilide, 3-hydroxy-2-anthracenecarboxy-*o*-toluidide, 2-hydroxy-3-carbazolecarboxy-*p*-chloroanilide, the product of the acid coupling of diazotised *o*-nitraniline with 1:7-aminonaphthol, and 4-(5′-chloro 2′-methoxybenzeneazo)-resorcinol. C.

Non-dusting Dye Powders: Production. Allied Chemical and Dye Corporation. B.P.642,338: Appl. and filing 11/2/1948; Publ. 30/8/1950; U.S.A. appl. 24/2/1947. The dusting of a soluble dye is inhibited by mixing it with 1-5 per cent. of a liquid lower dialkyl ester of a phthalic acid, such as dimethyl *o*-phthalate. C.

Azomethine-Anthraquinone Dyes: Production. CIBA Ltd. B.P.642,592: Appl. and filing 20/6/1947; Publ. 6/9/1950; Swiss appl. 28/6/1946 and 23/4/1947. A 1:4-diaminoanthraquinone, in which the amino groups are free, or either or both carry alkyl substituents, and which contains a methyl or aldehyde group in position 2, is treated by known methods so as to convert the methyl or aldehyde group into an azomethine group, for example, $-CH:NPh$. The products are fast blue dyes for cellulose acetate and nylon. C.

Rayon Cake: Dielectric Heat Drying. N. V. Onderzoekingsinstituut "Research". B.P.642,662: Appl. and filing 1/5/1947; Publ. 6/9/1950; Dutch appl. 18/3/1947. Rayon cakes are dried by placing them in a high-frequency field with one or both of the flat end-faces screened from the field by means of plates of a material having a loss-angle not greater than that of the rayon. C.

Nylon Fabric: Printing. CIBA Ltd. B.P.642,837: Appl. and filing 20/2/1948; Publ. 13/9/1950; Swiss appl. 21/2/1947 and 10/2/1948. Nylon fabrics are printed with a composition that contains an ester salt of a leuco vat dye, an agent that can liberate acid (such as ammonium thiocyanate), and, as oxidising agent, a salt of a nitro-arylsulphonic acid (such as *m*-nitrobenzenesulphonic acid); the print is developed by steaming. C.

Cellulose-Acetate/Nylon Mixtures: Differential Dyeing. H. C. Olpin and Dora L. Bell (British Celanese Ltd.). B.P.642,840: Appl. 26/2/1948; Filing 23/2/1949; Publ. 13/9/1950. Fabrics containing both cellulose acetate and nylon are dyed without affecting the nylon by using a dye that has an affinity for nylon in a purely aqueous medium, but applying the dye in a medium that contains an organic solvent capable of swelling cellulose acetate but not nylon. The examples disclose methylated spirit (with a small amount of acetic acid) and diacetone alcohol as such agents, assisted by sodium or ammonium thiocyanate. C.

Hydroxy-acylaminoazo and Dis-azo Dyes: Production. Sandoz Ltd. (1) B.P. 643,046: Appl. and filing 18/12/1947; Publ. 15/9/1950; Swiss appl. 20/12/1946. (2) B.P.643,054: Appl. and filing 15/1/1948; Publ. 15/9/1950; Swiss appl. 20/12/1946. The aminonaphtholsulphonic acids are generally capable of coupling both in acid and in alkaline media, but 2-amino-8-hydroxynaphthalene-6-sulphonic acid (Gamma acid), 2-amino-8-hydroxynaphthalene-3:6-disulphonic acid (2 R-acid) and 1-amino-5-hydroxynaphthalene-7-sulphonic acid (M-acid) can couple only once, that is either in acid or in alkaline medium. It is now reported that these acids, and their N-mono-alkyl, -cycloalkyl, -aralkyl or -aryl derivatives, may be coupled twice if, after the first coupling in an acid medium, the primary or secondary amino group in the resultant azo dye is acylated and any concurrent acylation of the 8-hydroxy group is rectified by alkaline hydrolysis. (1) B.P.643,046 discloses several new dyes for wool of the intermediate hydroxy-acylamino-azo series, for instance the mono-azo dye obtained by coupling Gamma-acid with 2-nitrodiazobenzene and acetylating. (2) B.P.643,054 discloses some 45 dis- and poly-azo dyes for wool, and 20 for cotton, in which the additional step is taken of coupling in an alkaline medium. C.

Stenter Clip: Automatic Opening Device. Mather and Platt Ltd. and R. C. Mather. B.P.643,062: Appl. 12/3/1948; Filing 27/1/1949; Publ. 15/9/1950. Means for operating stenter clips of the pivoted tongue-plate type comprise an endless band, belt or chain (preferably a rubber or rubberised fabric V-belt) that passes over a terminal pulley driven from the stenter clip chain, two pulleys that can be adjusted to vary the line of travel of the belt as it approaches and passes away from the terminal pulley, and a tension pulley, so that the belt makes such an angle to the line of travel of the clips that they are opened and closed gently and without friction even at high speed. C.

Self-Winding and Self-Traversing Reel. N.V. de Bataafsche Petroleum Maatschappij. B.P.643,129: Appl. and filing 2/7/1948; Publ. 15/9/1950; Dutch appl. 2/7/1947. A self-winding and self-traversing reel, for supporting a filament or thread undergoing a treatment, comprises a number of rollers that form the surface of the reel and have their axes stationary with respect to the reel and situated on a one-sheet hyperboloid of revolution the axis of which coincides with the axis of rotation of the reel, and means for rotating the individual rollers at a circumferential velocity less than (or in a simplified case, equal to) that of the reel as a whole but in the opposite direction. If the circumferential velocity of the reel as a whole is V_s and that of a roller is V_r and their radii are R and r, the reel is "self winding" when $V_r=0$, that is when the rollers are stationary. Neither winding nor traversing occur when $V_s=V_r$, so that for "self-traversing" as well as winding V_r must lie between o and V_s. In the simplified case referred to above, $V_r=V_s(r/R)$, and this relationship is secured by connecting each roller at a point eccentric from its axis with a crank member that rotates about an axis having the same eccentricity from the axis of rotation of the reel. C.

Organo-silicon Waterproofing Agents: Application. F. J. Sowa. B.P.643,458: Appl. and filing 22/11/1946; Publ. 20/11/1950; U.S.A. appl. 1/11/1941. Textiles are rendered water-repellent (1) by the application of an aqueous emulsion or solution in an organic solvent of an organo-silicon compound, followed by (2) a treatment that will convert the product on the fibre into a polysiloxane. Thus cotton fabric is impregnated with an emulsion of mono-amyltrichlorosilicane (5:95), dried at 30° C. in an atmosphere containing ammonia, and baked at 95° C. C.

Cloth Guiding and Feeding Apparatus. Julien Dungler. B.P.643,583: Appl. and filing 25/8/1947; Publ. 20/9/1950; French appl. 10/9/1946. The invention relates to apparatus, having electric feelers, for guiding cloth into dyeing, bleaching, printing, finishing and drying machines, which operates efficiently regardless of variations in the width of the cloth, and can be adjusted to avoid unnecessary actuation of the guiding mechanism when the selvedge is slightly irregular. Details are shown in three sheets of machine drawings. C.

Nylon Hosiery Setting Apparatus. Paramount Textile Machinery Co. B.P. 643,641: Appl. and filing 14/3/1944; Publ. 27/9/1950; U.S.A. appl. 22/8/1941. The invention relates to an autoclave, for the setting of nylon hosiery, which is provided with a closure independent of any of the usual manual or automatic clamping devices, and is sealed only by the pressure of the steam within, the

joint being sealed tighter the higher the pressure. The articles of hosiery are mounted on forms which are arranged in groups on a common conveyor that enters the autoclave, and the forms are treated and removed in groups. The arrangement is designed for maximum productivity, by reducing the periods occupied in sealing the vessel after a fresh load is inserted, and by reducing to a minimum the manual effort required of the operative. Details are shown in nine sheets of machine drawings and there are 23 claims. C.

Knitted Fabric: Pre-shrinking. F. R. Redman. B.P.643,714: Appl. and filing 19/2/1947; Publ. 27/9/1950 (Addition to B.P.571,821*). The original process for "pre-shrinking" a fabric by "rumpling" it lengthwise and widthwise in the presence of moisture and heat, may be modified for tubular knitted fabric, in which the major portion of the yarns may be considered as running lengthwise of the fabric, by working the fabric in that direction only. (*see *J. Textile Institute*, 1945, **36**, A525.) C.

Apparel Pads. J. A. Talalay. B.P.650,936 of 7/3/1951. Apparel pads consist of a web of carded wool bonded by an elastic substance. The web is sprayed with natural or synthetic rubber latex, dried, passed through a dilute latex bath and again dried. Cut pieces of the web are then coated with the adhesive and moulded to the shape desired. For shoulder pads, the binder is a substance which withstands dry-cleaning and pressing, *e.g.* an oil-resistant synthetic rubber. W.

Fur: Preventing the Discolouration of Mercury-carrotted Fur by Water Containing Carbonates and/or Bicarbonates. Brit. Hat All. Feltm. R.A., T. Barr, and D. Haigh. B.P.652,018 of 11/4/1951. Mercury-carrotted fur, or the felt prepared from it, when boiled in water to remove excess acid before dyeing, normally develops a discolouration. This discolouration is avoided when ammonium chloride or ammonium sulphate is added to the water in an amount chemically equivalent to, or in excess of, the amount of carbonates and/or bicarbonates present in the water. If the equivalent is used, the water is boiled for 10 minutes or more before entering the fur or felt. W.

Processing Wool Textile Materials, especially Felts. The Orr Felt & Blanket Co. B.P.654,079 of 6/6/1951. Apparatus is described for drying and curing an endless belt of papermaking felt impregnated with synthetic resin. The apparatus is claimed to cure the resin uniformly throughout the entire cross-section of the felt without injuring the fibres of the felt. W.

Textile Treating Agents. W. Baird, T. Barr, A. Lowe, and J. Oliver (to Imperial Chemical Industries Ltd.). U.S.P.2,518,444 of 15/8/1950. The manufacture is described of compounds of the formula $R(O.CO.NR'-CH_2OR'')_n$ (R=an aliphatic radical substituted or not, R'=hydrogen or an organic residue, R''=hydrogen or an alkyl radical and n=a whole number greater than 1) from polycarbamates of the formula $R(O-CO-NHR')_n$. The compounds have textile applications, *e.g.* for conferring anti-shrink properties on wool. W.

Tippy Wool Dyeing Assistants. A. A. Cook and I. Sapers (to Arkansas Co. Inc.). U.S.P.2,524,041 of 3/10/1950. Mixtures of water-soluble, high-molecular weight polyethylene glycol fatty esters and amino fatty condensation products are heated at 100-150° C. for ¼-2 hours. The products are used as assistants for dyeing tippy wool. It is claimed that a more level dyeing is obtained in a shorter time with better exhaustion of the dye. Examples relate to the use of these compounds in dyeing wool with chromiferous dyes. W.

Fur: Dyed Carrotted Fibres and Fabrics and Method of Dyeing the Same. S. G. Hoffman (to Hat Corporation of America). U.S.P.2,539,907 of 30/1/1951. Unlevel dyeing of carrotted fur fibres, fabrics, or hat bodies is due to the differential effect of carrotting on the tip and stem portions of the fibre, which causes the former to have a lower affinity for dyes. The mottling is overcome by using an acid metallised dye which has a strong affinity for the tip, mixed with an acid dye which has a strong affinity for the stem. Examples of various dye combinations are given. W.

Vinylidene Chloride Interpolymer as a Coating for Regenerated Cellulose Film. E. I. du Pont de Nemours & Co. and Gilbert Pitzl. U.S.P.2,541,167: Appl. and filing 25/6/1948; Publ. 13/2/1951. C.

Machine for Treating Fabrics at Full Width in Liquid Baths. Julien Dungler. U.S.P.2,545,075: Appl. and filing 31/8/1946 (in France 3/4/1946); Publ. 13/3/1951. C.

Yarns: Apparatus for Impregnating. Chemo-Textiles Inc., Webster Jones and John J. Heslin. U.S.P.2,545,468: Appl. and filing 30/6/1948; Publ. 20/3/1951. C.

Water-Repellent Fabrics of a Long Chain Amino-Ethoxy Cellulose and the Method of Making the Same. U.S. Dept. of Agriculture, John David Reid and George C. Dane. U.S.P.2,545,492: Appl. 23/1/1948; Publ. 20/3/1951. C.

Water-Repellent Treatment for Nonfibrous Regenerated Cellulose. American Cyanamid Co. and William M. Wooding. U.S.P.2,546,575: Appl. 6/8/1949; Publ. 27/3/1951. C.

Coloring Textile Materials with Azo Black Coupled with Phloroglucinol. Charles E. Maher. U.S.P.2,546,861: Appl. 26/11/1948; Publ. 27/3/1951. C.

Textile Print Blanket. Dewey & Almy Chemical Co. and Edward W. Merrill. U.S.P.2,547,220: Appl. and filing 1/5/1948; Publ. 3/4/1951. C.

Fire-Resistant Article, Method of Making, and Impregnant Therefor [Antimonyl Acetate]. Philadelphia Textile Finishers Inc., Morris J. Sostmann and Irwin L. Phillips. U.S.P.2,547,671: Appl. 13/10/1945; Publ. 3/4/1951. C.

Wax and Synthetic Resin Water-Repellent Compositions for Textiles. Quaker Chemical Products Corporation and Ellis Abrams. U.S.P.2,547,728: Appl. 4/10/1948; Publ. 3/4/1951. C.

Acrylonitrile Copolymers: Treatment with Sulphuric Acid followed by Dyeing with Acetate Dyes. American Viscose Corporation and Ralph B. Baker. U.S.P. 2,548,853: Appl. 1/10/1948; Publ. 17/4/1951. C.

Cellulosic Fibers: Treatment as Yarns, with Alkaline Solutions and Organic Solvents, to Improve Strength]. United States Rubber Co. and Hendrik Romeyn, Jr. U.S.P.2,549,014: Appl. and filing 22/6/1945; Publ. 17/4/1951. C.

Finishing Nylon Fabric Articles. Adams-Millis Corporation and Henry G. Bell. U.S.P.2,549,564: Appl. 27/10/1948; Publ. 17/4/1951. C.

Flame Resistant Fabric: [Boric Acid and Polyhydroxy Alcohol Resin Treated]. United States Finishing Co., Ladislaus Balassa and Neil Crawford Spencer. U.S.P.2,550,134: Appl. 10/3/1947, 5/3/1948; Publ. 24/4/1951. C.

Plastic Composition: Production from Waste Nylon Fibers. Orlon M. Arnold. U.S.P.2,550,650: Appl. 19/9/1945; Publ. 24/4/1951. C.

5—ANALYSIS, TESTING, GRADING AND DEFECTS

(A)—Fibres

Moisture Determination: "Air Current" Method. R. W. Money and W. A. Christian. *Analyst*, 1951, **76**, January, pp. 19-24. Particular reference is made in this paper to moisture in white sugars. The method consists of drawing a preheated current of air through a sample in a specially designed apparatus. The results appear to be reproducible and to agree satisfactorily with those obtained by other methods, such as the A.O.A.C. and Karl Fischer methods. There are nine references. C—**5A.**

Angle of Torsional Rupture: Significance in Synthetic Fibre Structure Investigation. Paul-August Koch. *Textil-Rdsch.*, 1951, **6**, No. 3, pp. 111-116. In German. The author discusses the advantages of determining the angle of torsional rupture as a means of estimating the wear and brittleness qualities of synthetic fibres. The value obtained is independent of the fineness of the fibre, but is related to the nature of the material and to structural changes due to stretching. Broadly speaking (that is, making due allowance for degree of stretch) the angle of fracture is also a good guide to the type of fibre being examined. A table is given showing the range of fracture angles of different materials: for example, polyamide staple fibre, 27°–34°; unchlorinated polyvinyl chloride, 50½°; and so on. Among figures given for comparative purposes are: viscose rayon (normal types), 50½°–54½°; acetate rayon, 44°–49½°; glass fibres,

85°–87½°. It should be noted that a high angle is coincident with lower flexibility. Formulæ for calculating the angles are given. There are fifteen references. (See also *J. Textile Institute*, 1949, 40, A520.) C—5A.

Urea and Melamine Resin Finishes: Influence on the Mechanical Properties of Cotton Fibres. R. Aenishaenslin. *Ciba Review*, 1951, No. 84, February, pp. 3061-3062. The author gives a brief account of an investigation into the effect of three synthetic resins, of the urea and melamine types, on cotton fibre properties. The properties considered include: angle of crease; swelling; tensile strength; abrasion resistance; and tensile strength and abrasion resistance after stripping with N/50 hydrochloric acid. The results, reproduced in tabular form, indicate that excess curing time is detrimental, that the urea resin effects most permanent damage, and that a similar resistance to creasing and swelling is imparted by the two types of resin. C—5A.

Cotton: Maturity. Paul-August Koch. *Textil-Rdsch.*, 1951, 6, No. 4 pp. 169-175; *Deutsche Textilgew.*, 1951, 53, pp. 15-20. In German. In this concise and informative article, the author defines and describes mature, immature and dead cotton fibres, as well as those showing abnormal growth characteristics (for example, irregular cell structure, deformation, walls grown together, sac formation, and so on.) He then goes on to review various methods for determining the maturity of cotton fibres, these procedures including microscope, coloration, chemical and physical methods. Evaluation formulæ are presented (for example, different ways of expressing the coefficient of maturity are formulated). Nep formation during growth and processing is also discussed. There are thirty-nine references. C—5A.

Physical Textile Testing: A Training and Reference Manual. Mary Jo Wesson. *Text. Industr.*, 1951, 115, No. 3, pp. 109-167. This comprehensive collection of information on physical testing methods for textiles was originally compiled as a training manual for new personnel of the testing department of an American textile manufacturing company. After a brief introduction on general laboratory practice, the author deals with individual methods used in the testing of fibres, yarns, and fabrics. In each case information is given on the apparatus and the testing techniques employed, and on the calculation of results. Elementary statistical calculations and the calibration of testing machinery are also covered. The manual is liberally illustrated with photographs. C—5A.

Picker Lap Tests. Earl Olsen. *Text. Industr.*, 1951, 115, No. 1, pp. 105-106. A procedure for checking the yard-weight variation of picker (scutcher) laps is described. C—5A.

Radio-Frequency Electronic Moisture Meter. A. T. S. Babb. *Analyst*, 1951, 76, January, pp. 12-18. A moisture meter based on change of permittivity with moisture content, and utilising radio frequencies, is described. Examples are given of its use on materials of widely differing texture and moisture content. Cops of cotton were tested on the meter. The meter is shown to be accurate within 0·3 per cent. of moisture over its whole working range, which is from 1 or 2 per cent. to 60 per cent. of moisture, provided that measurements are made under the same conditions as are used for calibration. C—5A.

Karl Fischer Reagent: A Review of Some Developments in Use. A. G. Jones. *Analyst*, 1951, 76, January, pp. 5-12. Some recent developments in the use of the Karl Fischer reagent are surveyed under the headings of composition and preparation of the reagent, method of titration and determination of the end-point, and the versatility of the reagent. The relationship between various theoretical equations and the practical findings are examined, the advantages and disadvantages of using the Fischer reagent in two solutions are discussed, and a few applications of the reagent are mentioned. There are eighteen references. C—5A.

Suspended Webs: Shape and Resultant Stresses. W. E. Baltz. *Melliand Textilber.*, 1951, 32, No. 3, pp. 199-201. In German. Mathematical expressions are derived for the shape of curves in material when suspended during processing. From these expressions, the distribution of stresses within the material can be ascertained. C—5A.

Division of Tests and Technical Investigations. Anon. *Inform. Invest. Agric. (IDIA), B. Aires*, 1950, 3, No. 30, pp. 24-26 (through *Plant Breeding Abstr.*, 1950, 20, No. 4, p. 761). A brief description is given of the techniques used to evaluate cotton fibre quality in Argentina. C—5A.

Fibres in a Bundle: A New Method for the Measurement of the Mean Diameter. R. G. Giovanelli. *J. Sci. Instrum.*, 1947, **24**, No. 12, pp. 314-317. A description is given of a new rapid method for measuring the mean diameter of the fibres in a bundle. The method involves a determination of the mass of the bundle and a photographic measurement of the projected area, viewed perpendicular to its length. The method requires the density of the fibres to be constant, and applies only to nearly circular fibres for which the coefficient of variation is not too great. An instrument has been made using this method, and a comparison of results with projection microscope measurements is given, using wool fibres. Errors in the method and instrument are discussed. C—5A.

Cotton: Spinning Tests on Micro Samples. V. V. Gupte, H. Navkal and D. L. Sen. *Indian Cott. Gr. Rev.*, 1950, **4**, pp. 52-59 (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 758). A description is given of a spinning technique suitable for the rapid testing of small samples in breeding work. C—5A.

Technological Reports on Standard Indian Cottons, 1949. D. L. Sen. *Technol. Bull. Cent. Indian Cott. Comm.*, 1949, **Ser. A**, No. 72, 75 pages (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 761). The report provides the results of spinning tests on fourteen standard Indian cotton varieties tested for the season 1948-1949. C—5A.

Technological Reports on Trade Varieties of Indian Cottons, 1949. D. L. Sen. *Technol. Bull. Cent. Indian Cott. Comm.*, 1949, **Ser. A**, No. 73, 91 pages (through *Plant Breeding Abstr.*, 1950, **20**, No. 4, p. 761). The report presents the results of the 1949 spinning tests on samples of twenty-nine representative commercial varieties of Indian cottons, and three varieties of East African cotton, ARBP 52, AR Busoga, and AR Jinja. As in reports of previous years, the introduction includes a survey of the different varieties sampled in the tests since they were first carried out on the 1929-30 crop. C—5A.

Bikaner Wool, a Leading Carpet Wool, and its Improvement. G. S. Mahal, A. Johnston and R. H. Burns. *Text. Res. J.*, 1951, **21**, 94-101. Eight samples illustrating average and extreme types of Bikaner wool were selected from 28 samples received from the Government Livestock Farm at Hissar, India. These 8 samples were analysed for fibre types, dividing them into true wool, hair, heterotype, and kemp fibres. Both the benzol test and microscopic cross-sectional images were used in the classification. Fibre thickness, stretched fibre length, and contour ratio were determined for the 8 samples along with the surface scale measurements for the different fibre types. W—5A.

Angora Wool: Specific Gravity. H. W. Hohls. *Melliand Textilber.*, 1951, **32**, 99-102. The structure of Angora rabbit hair is described. Photomicrographs show the small air chambers in the interior of the hair, and the enveloping substance, keratin, which may vary in composition for different hairs. The specific gravity of the hairs of Angora rabbits was determined at the April and July shearings. There was no correlation between yield and specific gravity, although a slight correlation appeared to exist between the hair weight per sq. cm. of surface and specific gravity. If the shorn hairs are stored before measuring the specific gravity, the latter decreases, owing to the drying of the small air chambers. The more small air chambers the hairs possess, the smaller is the specific gravity. Determination of the specific gravity is impracticable for textile purposes, because of the expense involved in making the necessary number of measurements. W—5A.

Fibre Scales from the Wool Types of Domestic Sheep and Wild Life: Types and Dimensions. G. S. Mahal, A. Johnston and R. H. Burns. *Text. Res. J.*, 1951, **21**, 83-93. Scale structure and dimensions and fibre thickness were measured on a number of fibres representing the different fibre types from fleeces of several wild life species, including the Big Horn sheep, and of fibres from the various wool types of domestic and primitive sheep, including the fine-wool, medium-wool, long-wool, and mixed-wool types. The scale index, or relation of scale height to fibre thickness, was studied as a means of possible identification of fibre types and as a breed characteristic. W—5A.

Wool Tops: Inter-laboratory Comparison of Fibre Diameter: Measurements with the Projection Microscope. ("Comparaison Interlaboratoire du Diametre des Fibres: Mesures Effectuées au moyen du Microscope de Projection.") R. C. Palmer. *Bull. Inst. Text. France*, 1951, No. 24, 69-75. The results are given of

further tests made with the projection microscope on the fibre diameter of wool tops (see also *J. Textile Institute*, 1951, **42**, A170). There were systematic differences of up to one micron between the results of the six co-operating laboratories. W—**5A.**

Schlumberger Experiment, 1950. ("Expérience Schlumberger 1950.") R. C. Palmer. *Bull. Inst. Text. France*, 1951, No. 24, 77-80. The results are given of Schlumberger fibre length tests made in three laboratories. The reproducibility of the mean lengths found, and also the coefficients of variation, differed considerably; the reason for this will be investigated. W—**5A.**

Length of Wool in a Top: Assessment by Wool Merchants. ("L'Appréciation de la Longueur de la Laine sur Ruban de Peigné par les Lainiers.") F. Monfort and W. Rey. *Bull. Inst. Text. France*, 1951, No. 24, 81-93. Wool fibres in tops were measured for length on the Schlumberger apparatus and the results compared with those obtained by manual and visual examination by wool merchants. Mechanical tests are necessary to determine intermediate lengths, and to distinguish the lengths of merinos and crossbreds. W—**5A.**

Fibre Diameter Measurements of Tops, 1947, E, F, G, H, J. Wool Industries Research Association. *J. Textile Institute*, 1951, **42**, P132-P136. See *J. Textile Institute*, 1949, **40**, A199. W—**5A.**

Wool Fineness: The Effect of Moisture on Measurement. S. L. Anderson and R. C. Palmer. *J. Textile Institute*, 1951, **42**, P137-P144. See *J. Textile Institute*, 1949, **40**, A199. W—**5A.**

(B)—YARNS

Fancy Twist: Calculation. Heinrich Cirr. *Melliand Textilber.*, 1951, **32**, No. 4, pp. 248-249. In German. A readily applied method for determining the twist numbers of a fancy yarn is described. C—**5B.**

Frenzl-Hahn Universal Yarn-Testing Machine: Practical Evaluation. Wolfgang Bobeth. *Melliand Textilber.*, 1951, **32**, No. 4, pp. 271-276. In German. The manifold applications of the Frenzl-Hahn universal yarn-testing machine are described. This apparatus determines (on the running yarn) the extensibility, regularity and elasticity of the thread, and indicates periodic changes in tension, treatment effects and friction, and periodic recurrence of faults, properties in the wet state, and so on. Breaking tests may also be carried out on this machine. Procedures for correcting results given by the running extension test, and the importance of this test, are discussed at length. The arrangements of the machine is shown diagrammatically. There are thirty references. C—**5B.**

Yarn Irregularity: Measurement. Eugene Sorez. *Textielwezen*, 1951, **7**, No. 2, pp. 23-25. In French. Three yarn irregularity testers, patented by Louis Guimbretière and Eugene Sorez, are described. (1) The Régularimètre consists essentially of a liquid feeler (mercury) which comes into intimate contact with the thread. The most minute deformation of the liquid is recorded electrically so that details of diameters, and lengths of sections of the thread in terms of the diameter, are obtained automatically. From these records all necessary statistical data can be obtained. (2) In the Automatic Statistical Dynamometer, the force applied at regular intervals is invariable. By means of this device it is possible to measure the breakage stress and elongation, the force-elongation diagram, and the work done in breaking the thread. Frequency curves for rupture and elongation, chronological recording of breaking loads and elongation, photographic recording of force-elongation diagrams, and average force-elongation curves for any series or sub-series of tests, are all obtained automatically. (3) The Harmonic Analyser deals with the photographic data supplied by (2). The system of measuring irregularity by these machines is discussed summarily. Constructional details and diagrams are not included. C—**5B.**

End Breakage Rate: Measurement. P. D. Vincent and Miss M. E. Brown. *Text. Merc.*, 1951, **124**, No. 3238, pp. 704, 707, 709; No. 3239, pp. 759, 760, 762. The meaning of the word "random" as applied to end breakages is explained. It is shown that a large number of breakage tests must be made for the breakage rates calculated from them to be close to the true breakage rates. The number of such tests required varies from mill to mill, and the procedures employed to determine this number are outlined. Two cases are considered—a simple case (one operative with one machine working under uniform atmospheric conditions)

and the case where conditions are more complicated (that is more than one machine, more than one operative, and varying atmospheric conditions). The final section of the paper deals with the practical details of measuring end breakages at various processes, namely, ring spinning, carding, weaving, and winding. C—**5B.**

Rayon Staple Yarns: Strength. F. H. A. M. Klompé. *Rayon Rev.*, 1950, 4, No. 3, pp. 61-65. In Dutch. This article deals with the problem of assessing yarn strength on the basis of fibre characteristics, and getting what the author refers to as "maximum strength realisation" when fibres are spun into yarn. Graph 1 plots breaking-length against twist for a rayon fibre of 1·5 denier, 40 mm. staple, showing the limits of optimum twist. Hereafter, twist is not taken into account, all the yarns dealt with being spun within the limits of optimum twist for the yarn in question. Graphs 2, 3 and 4 show the breaking-length plotted against fibre length, denier and count, respectively (the figures in graph 4 being English count numbers). Graphs 5, 6 and 7 show denier against yarn strength in grams, lea strength in pounds, and percentage extensibility, respectively; and graph 8 shows breaking length against percentage "strength realisation". This percentage, for a 62 mm. staple yarn of count 20, ranges from 45 at 5 denier to 66 at 1·5 denier; for a 1·5 denier yarn of count 30 it ranges from 52·5 at a staple length of 31 mm. to 61 at a staple length of 62 mm.; and for a yarn of count 40, 1·5 denier, the percentage ranges from 43 at count 60 to 66 at count 12. The author has found that the "strength realisation" of good quality staple rayon yarn can vary between 40 and 70 per cent., and this article is an attempt to explain how this can come about. C—**5B.**

Woollen Processing: The Planning and Conduct of Experiments. A. Brearley. *Text. Rec.*, 1951, **68**, No. 817, 97-100. The carrying out of an investigation under mill conditions entails certain difficulties, which can often be overcome by careful planning. A typical example covering the entire processing of a shoddy blend from the raw material to the finished fabric is given, together with details of methods of test, size of samples, and interpretation of the results. W—**5B.**

Worsted Yarn Count: Variation in a Delivery. ("La Variation du Numéro de Fil de Peigné dans une Livraison.") M. W. H. Townsend and R. C. Palmer. *Bull. Inst. Text. France*, 1951, No. 24, 109-111. The results are given of tests on worsted yarn counts made in four laboratories. There was no consistent difference in count between the interior and exterior layers of the bobbins; count variation was sometimes greater from one delivery crate to another than from one bobbin to another in the same crate. Sampling methods must take into account possible variations of 3 per cent. from one crate to another, and of 6·5 per cent. from one bobbin to another in the same crate for lengths of 100 m.; the figures are 2 per cent. and 5 per cent. respectively for lengths of 500 m. Sampling data are given. W—**5B.**

Yarn Irregularity: Analysis. M. W. H. Townsend and D. R. Cox. *J. Textile Institute*, 1951, **42**, P107-113. Many properties of the irregularity measured in yarns are not described by the over-all variance. It is shown that the relation between the mean standardised variance $V(L)$ and the length L within which $V(L)$ is measured leads to indices characterising types of irregularity which may be of practical importance. The $V(L)$ curve is also considered as an alternative expression for the correlogram, and examples are given to illustrate the relationship. The correlogram may provide the easiest method of measuring $V(L)$ and its associated indices. Some practical examples are quoted. W—**5B.**

Yarns: Method for Measuring Irregularity. ("Un Procédé pour Mesurer l'Irrégularité des Fils.") A. Barella. *Bull. Inst. Text. France*, 1951, No. 24, 113-121. The profile of a point on the yarn is projected on to a graduated or photographic screen. Observations of the yarn diameter are made at selected intervals apart. The results obtained by this method are compared with those obtained by other means during the International Wool Textile Organisation's yarn irregularity experiments. W—**5B.**

Worsted Yarn: Proposed Establishment of Standards of Cross-Sectional Regularity. ("Proposition d'établissement de normes de régularité sectionnelle pour le fil peigné.") M. Monfort. *Rayonne*, 1951, **7**, No. 5, 24-8. The Zellweger-Uster instrument is widely used in various countries for the measurement of cross-sectional irregularity of yarns; in the manufacturers' instructions standards of regularity for worsted yarns are quoted which are based only on the metric

count of the yarn and do not take account of the fineness and length of the fibres. The author proposes the use of an index of irregularity, which he suggests should be fixed by international agreement for various grades of yarn irregularity; the index is defined as the ratio of the actual coefficient of variation of cross-sectional irregularity to the limiting coefficient of variation of cross-sectional irregularity. Graphs may be constructed for the different fibre diameters, relating the metric count and the actual coefficient of variation of cross-sectional irregularity for various grades of yarn irregularity. W—**5B.**

Yarn Irregularity: The Use of Correlograms for Measuring. D. R. Cox and M. W. Townsend. *J. Textile Institute*, 1951, **42**, P145-P151. See *J. Textile Institute*, 1949, **40**, A200. W—**5B.**

Yarn Irregularity: Comparative Measurements. Wool Industries Research Association. *J. Textile Institute*, 1951, **42**, P152-P161. See *J. Textile Institute*, 1949, **40**, A200. W—**5B.**

Irregularity of Yarns, Rovings and Slivers: A Contribution to the Study. A. M. Van den Abeele. *J. Textile Institute*, 1951, **42**, P162-P168. See *J. Textile Institute*, 1949, **40**, A200. W—**5B.**

(C)—FABRICS

The BTK Textile Abrasion-Testing Machine. Hermann Mintrop. *Melliand Textilber.*, 1951, **32**, No. 4, pp. 269-270. In German. The BTK abrasion testing machine is suitable for testing textiles, leather, leathercloth, laminated fabrics and similar materials. It consists essentially of a vertically supported abrasion head rotating at a speed of 1,000 r.p.m. The specimen support can be caused (1) to rotate eccentrically, and (2) to move reciprocally in a warpwise or weftwise direction, whilst the abrasion head is rotating or is stationary. By means of suitable accessories other wear-motions can be simulated. C—**5C.**

Test Equipment and Materials AATCC Catalogue. American Association of Textile Chemists and Colorists. *Amer. Dyest. Rep.*, 1951, **40**, No. 6, pp. P182-192. A price list is given of equipment and materials for testing such properties as colour fastness, water proofness and fire resistance of finished fabrics. Sources of supply (in America) are also listed, and brief illustrated descriptions are given of each piece of apparatus. C—**5C.**

Crease Properties: Elöd and Etzkorn Determination: Modified Method. M. Kramer. *Melliand Textilber.*, 1951, **32**, No. 4, pp. 314-317. In German. In this modification of the Elöd and Etzkorn method of testing creasing properties, particularly of rayons, the fibres (yarns) are wound round an aluminium plate (7 cm. long, 3·5 cm. wide and 1 mm. thick) with a 4·5 cm. slit down the centre, and are then allowed to remain in a conditioned atmosphere for at least 24 hours. By cutting the fibres where they cross the slit, a number of short bent lengths of thread are obtained; the angles of the bends are quickly measured. It is claimed that in a hundred tests, the average apparent error is not greater than 1 per cent. The effect of winding tension and extension has been studied for a number of different materials (natural, regenerated and synthetic fibres) and the results are discussed and presented graphically. C—**5C.**

Testing of Textiles: Real Differences and those Due to Random Sampling. ("Zufällige und gesicherte Unterschiede bei textilen Untersuchungen.") U. Graf and H.-J. Henning. *Text.-Praxis*, 1951, **6**, 282-284. The *t*-test can be used to assess with statistical certainty whether a definite property of a textile material will undergo change with a definite treatment. Examples are given of the following applications of this test: comparison of the investigations of two testing establishments on the warp strength of a heavy fabric; evaluation of two wool oils; assessment of the changes in strength of dyed wool hanks. W—**5C.**

Abrasion Test as a Criterion to Determine the Wear of Textiles. F. H. Germans. *J. Textile Institute*, 1951, **42**, T185-193. A study of the relation between the duration of the abrading action and the loss of weight for various materials in different shapes. W—**5C.**

Shrinkage of Knitted Fabrics and Garments Containing Wool: Standard Method for Determining. Textile Institute. *J. Textile Institute*, 1951, **42**, S2-S7. This is Tentative Textile Specification No. 22, 1951, which replaces Tentative Textile Standards 1, 1939 and 1 (a), 1942. Methods are prescribed for preparing cut test specimens, and for determining shrinkage on soaking

(relaxation shrinkage), shrinkage on washing, and shrinkage due to milling. The machines used are (i) the horizontal cylindrical rotating type for washing tests, and (ii) a single hammer milling machine for half-hose. In the appendices, which are part of the Specification, the preparation of small complete garments is described, and details are given of the milling machine. W—5C.

Shrinkage Due to Felting: The Use of the Furness Milling Machine in Determination. A. N. Davidson. *J. Textile Institute*, 1951, 42, s8-s16. This machine, which meets the requirements laid down in Tentative Textile Specification No. 22, has been subjected to a rigorous examination. Testing the machine has shown that it is sensitive to both speed and load, but when used under standardised conditions it is very satisfactory as a shrinkage testing apparatus. W—5C.

Nylon Hose: 60 Gauge: Testing. J. K. Novins. ("Twenty denier, sixty gauge.") *Hosiery Underwear Rev.*, 1951, 34, (4), 56-9, 181. Report of special tests made by the U.S. Testing Co. on both 51 and 60 gauge stockings. Tests were made to check elasticity, by the Frazier Hosiery Flexing test; sag resistance, by the du Pont sandpaper method; run-resistance, using the Run-Resistant Meter; bursting strength, using the Muller Tester; and abrasion. Illustrations. H—5C.

(D)—Other Materials

Carbamide Resins: Detection of Fishy Odour in Finished Materials. W. Kraus. *Ciba Review*, 1950, No. 83, pp. 3030-3032. This is an English version of the article appearing in *Textil Rundschau*, 1950, 5, No. 10, pp.395-399. (See *J. Textile Institute*, 1951, 42, A226.) C—5D.

Detergents and Textile Auxiliaries: Studies on Foaming. II. An Improved Apparatus for Testing Foaming Properties. Ernst Götte. *Melliand Textilber.*, 1951, 32, No. 3, pp. 210-212. In German. The author describes an improved machine for generating and measuring foam in detergents and auxiliaries. Essentially it consists of six glass measuring cylinders in which a polymethyl-methacrylate perforated disc is caused to move with a reciprocating motion in a vertical direction by means of rods attached to a framework, which itself is actuated by an eccentric drive. The cylinders are kept in a thermostatically controlled bath. The conditions for making comparative tests, for example, between different substances or one substance at different concentrations, are described. By means of this method it has been found that maximum frothing of sodium alkyl sulphates occurs at the critical concentration, that is, the concentration at which micelle formation commences. (See also *J. Textile Institute*, 1948, 39, A607.) C—5D.

Colors in Dyed Paper: Identification. E. I. du Pont de Nemours. *Du Pont Tech. Bull.*, 1950, 6, No. 4, pp. 183-195. The article gives lists of (1) factors to be considered in identifying the colour components of a dyed paper sheet, (2) colours frequently employed to produce fast-to-light shades on paper, (3) six testing reagents, and (4) the reaction of various dyes to these six reagents. C—5D.

Strains in Tires: Measurements. D. L. Loughborough, J. M. Davies and G. E. Monfore. *Canad. J. Res.*, 1950, 28, Sec. F, No. 12, pp. 490-501. Direct measurements of strains in the cords of a tyre were taken using two different techniques. In the first technique the increase in the length of the cord elements was measured. The second technique was radiographic, and the change in length of the cord elements, marked by steel wires, was followed by photographic means. During rotation, the tyre cords were found to be subjected to vigorous alternation of compression and tension, and angles between the cords change by as much as two degrees. There are seven references. C—5D.

Suture Materials: Measurement of Tensile Strength. S. P. Steward. *J. Sci. Instrum.*, 1951, 28, No. 4, pp. 114-115. A machine designed to measure the breaking load and extensibility of surgical catgut is described, with a photograph. C—5D.

Oiled Tops: Inter-Laboratory Test (1950) on Extraction with Ethyl Ether and Alcohol. ("Expérience Interlaboratoire 1950 sur l'Extraction à l'Ether Ethylique et à l'Alcool de Rubans de Peigné Ensimés.") E. G. Carter. *Bull. Inst. Text. France*, 1951, No. 24, 95-107. To three separate similar samples of dry combed top were added about 6 per cent. of (*a*) Class A 1949 combing oil

(British), (*b*) olein (Belgian), and (*c*) mineral oil containing 10 per cent. of an ethylene oxide derivative (French). The samples were gilled and sent to 6 laboratories for extraction successively with ethyl ether and ethyl alcohol according to the International Wool Textile Organisation's prescribed method. Half the samples were extracted after drying. Drying before extraction reduced the ether extract, and increased the alcohol extract, the total extract remaining unaffected. For the alcohol extract and total extract, the results varied in the different laboratories; for the ether extract, the results agreed in the case of 5 of the laboratories. One laboratory (in Holland) modified the standard method and obtained considerably higher ether extracts. W—**5D.**

PATENTS

Electronic Oscilloscope Light-Reflecting and Light-Scattering Measuring Instrument. C. A. Chester and Wiggins Teape & Co. (1919) Ltd. B.P.642,456: Appl. 25/5/1948; Filing 11/5/1949; Publ. 6/9/1950. A device for gauging the light reflected or scattered from a surface comprises (1) a photo-electric cell for receiving the light while the "(surface" is rotated at high speed (at least 1,000 r.p.m.) by means of a synchronous motor, (2) a light source providing a beam at an adjustable angle of incidence, and (3) an oscilloscope, receiving power from the same source as the motor, for giving on its screen a graph of the light intensity. C.

Electric-Recording Rotational Viscometer. Dobbie McInnes Ltd. and A. R. Boyle. B.P.643,552. Appl. 21/4/1948 and 7/1/1949; Filing 16/4/1949; Publ. 20/4/1950. The claims are for a rotational viscometer in which a body is rotated in the liquid under test by a two-phase motor supplied from a single-phase source, one phase of the motor being of such a value that resonance occurs at approximately synchronous motor speed, and the current in the other phase (the "direct" phase) being measured as the viscosity index. The rotor of the motor may constitute the "rotatable body". The speed of rotation may be varied automatically over a given range and the consequent variation in viscosity recorded continuously. Six sheets of machine drawings and circuit diagrams are provided. C.

Hair: Apparatus for Determining the Thickness. W. F. Toynbee and P. F. A. Grein. B.P.650,953 of 7/3/1951. Apparatus for determining the thickness of hair, especially human hair, consists of gripping feelers together with means of mechanical magnification. The indicator gives a direct reading of the grade of hair being measured. Hair of elliptic section may be twisted while being measured. W.

Testing The Effect of Atmospheric Conditions on Tailored Fabrics: Method and Apparatus. Henry Booth Methods Corporation and Henry Booth. U.S.P. 2,547,367: Appl. and filing 13/3/1946; Publ. 3/4/1951. C.

7—LAUNDERING AND DRY-CLEANING

Reducing Power of Textile Fibres. R. Haller. *Ciba Review*, 1951, No. 84, February, pp. 3062-3063. Prolonged boiling of dyed cotton can sometimes cause impairment of shade or even complete destruction of the dyestuff. This has been shown to be due to the reducing properties of the fibres, particularly when scouring and/or bleaching has not been thorough. A report is presented on the behaviour of easily reducible Cibanone Yellow GN with bleached cotton (no reduction), unbleached cotton (partial reduction), viscose rayon (marked reduction), cuprammonium rayon (partial reduction), ramie (partial reduction), jute and hemp (considerable reduction), silk (marked reduction) and wool (complete dissolution of the fibre). Reduction was indicated by the fact that dilute solutions of the dye paste containing 1–2 drops of strong sodium hydroxide solution, turn green, greenish olive, bluish olive or pure blue, with increasing reduction. The greater the reduction, the deeper was the yellow on the fibre. C—**7.**

8—BUILDING AND ENGINEERING

(A)—CONSTRUCTION AND MAINTENANCE OF BUILDINGS AND PLANT

American Hosiery Factory Design. Samuel B. Lincoln. *Textil-Praxis*, 1950,

5, No. 8, pp. 478-484. In German. The tendency in modern American hosiery factory construction is to build windowless single-storey structures so that the advantage of a firm base for machinery and ease of extension of premises can be combined with great control of temperature by elimination of local heating by the sun. Colour, noise suppression, flooring, general lay-out, *etc.*, are discussed. C—8A.

Vibration: Huntsville's Problem Solved. F. J. Crandell. *Text. Industr.*, 1951, 115, No. 3, pp. 102-106. An account is given of how serious vibrations set up by machinery on the upper floors of a textile mill were damped by the installation of spring isolators under the floor beams. C—8A.

Modern Structures for the Textile Industry. Karl Paulus. *Textil-Praxis*, 1950, 5, No. 8, pp. 472-473. In German. This article is a discussion of modern steel-concrete structures designed specifically for textile use, and is illustrated by means of diagrams and photographs of recent work. C—8A.

Perfog Schappe: Plant Layout. Richard Horn. *Textil-Praxis*, 1950, 5, No. 8, pp. 470-471. In German. *Textil-Praxis* (Eng./Span. Edition), 1950, pp. 1-4. The article describes co-ordination between the technical requirements of Perfog synthetic schappe silk, and the planning of a new factory (with simultaneous consideration of possible extension requirements). C—8A.

Textile Factory: Requirements. Fr. Walz. *Textil-Praxis*, 1950, 5, No. 8, pp. 465-467. In German. This is a general survey of the factors to be considered in planning a new mill. Such factors include the site, the nature of the ground (solidity), probable power demand and available supply, accessibility and transport, and labour. The needs of different types of textile mill are discussed individually, considerations of finance, size and services being included. C—8A.

Roof Structure and Lighting in Textile Buildings. H. Werner. *Textil-Praxis*, 1950, 5, No. 8, pp. 474-477. In German. Modern design in roof structure is discussed. C—8A.

Windowless Buildings, Yes or No ? Rudi Merz. *Textil-Praxis*, 1950, 5, No. 8, pp. 487-488. In German. The disadvantages of windows in textile mills include uneven lighting, air-conditioning difficulties (large cooling or heating area, that is, uncontrollable area), condensation on window panes, *etc.* A new windowless multi-storey building recently completed in Germany is described, and is compared with an adjoining conventional structure. Points arising in the construction of windowless buildings are discussed. C—8A.

Machinery Foundations: Longer Life. Edward Ingham. *Dyer*, 1951, 105, No. 8. pp. 515, 517, 519. Some information is given on the construction, maintenance, and repair of concrete foundations for machinery. C—8A.

Modern Dyehouse Construction and Layout. C. E. Müller. *Textil-Praxis*, 1950, 5, No. 8, pp. 504-506. In German. The use of closed vessels in conjunction with good building design assists considerably, not only in improving working conditions, but also in protecting the material being dyed from condensation water, and protecting electrical installations, auxiliary machinery, building structure, *etc.* from deterioration due to excessive exposure to moisture. Closed vessels also effect considerable economy in steam consumption. C—8A.

Nylon Plant: Construction. *Hosiery Industry Wkly*, 1951, 60, (27), 3. Note on the construction of a new nylon plant by the Chemstrand Corporation. H—8A.

(C)—Steam Raising and Power Supply

Steam Consumption: Control. Leo Walter. *Textile World*, 1951, 101, No. 4, pp. 113-119 (4 pages). An illustrated account is given of some methods for controlling the consumption of steam in dye houses. C—8C.

(F)—Lighting

Lighting of the New House of Commons. C. Dykes Brown. *Trans. Illum. Engng. Soc.*, 1951, 16, No. 2, pp. 29-47. Lighting has been designed as an integral part of the rebuilt House of Commons. In the Debating Chamber artistic requirements have been given first consideration, new techniques being evolved where necessary to meet the requirements. Cold-cathode high voltage lamps are used in the lamplight providing the main illumination, and the lighting can be raised smoothly from zero to full intensity. There are numerous photographs and four references. C—8F.

Fluorescent Lamp in Series with an Incandescent Lamp: Instant-Starting. W. Elenbras and T. Holmes. *Philips Tech. Rev.*, 1950, **12**, No. 5, pp. 129-135. An incandescent lamp can be connected in series with a fluorescent lamp as a stabilizing resistance instead of a choke. It has the advantage of giving light and dispensing with the starter. The lamp, which is a special one and is called the "TL" S lamp, has an ignition voltage so low that it will ignite at 180V A.C. without any voltage surge. An attractive fixture of "Plastocel" which holds two fluorescent lamps and two incandescent lamps, the four yielding 5600 lumens for a consumption of 215W., is described. C—**8F.**

(G)—Heating, Ventilation and Humidification

Thermal Efficiency: Industrial and General. ["Efficiency in Industry and Elsewhere."] E. G. Phillips. *Proc. Instn Mech. Engrs*, 1950, **162**, No. 4, pp. 465-467. The author attacks the lack of interest in thermal efficiency shown both by industry and by public authorities. As an example of the unfortunate tendency to design down to a lower initial cost, instead of up to a higher efficiency and a lower running cost, he quotes a modern textile-drying machine which, if installed, would have used 250 per cent. more coal and 350 per cent., more electricity than the machine it was to supersede. He also refers to the use of solid brass bearings in Lancashire ring-spinning machines, in contrast to the fitting of the same machines with ball bearings when they are to be exported to Far Eastern buyers, who willingly make the extra initial outlay which they know will speedily be repaid by the power economy made possible. The author claims that impressive economies in power and increases in thermal efficiency could be made by abandoning our orthodox ideas of power self-sufficiency, and adopting new methods of co-operation in power consumption and disposal. The possibilities of district heating should no longer be neglected, and problems of accounting or Civil Service procedure should not be allowed to condemn fruitful schemes for the buying, selling or sharing of fuel or power. By means of a few historical illustrations, the author shows how little progress in thermal efficiency has been made in the last hundred years; in view of Britain's present power shortage, he suggests, it is high time that we found ways of improving on our present profligate wastage of our resources. C—**8G.**

Heat Transmission through External Walls. J. J. Parsons. *Inst. Heat. Vent. Eng. J.*, 1949, **17** (171), pp. 339-45 (through *Building Sci. Abstr.*, 1949, **22**, No. 11, p. 346, which gives the author's summary). The paper presents the thermal transmittance of six walls, as determined experimentally in the Wall Laboratory at the Building Research Station. It is shown that, for all practical purposes, the heat loss through a wall is adequately represented by the usual expression $Q=U(t_i-t_o)$, where U is the thermal transmittance, and (t_i-t_o) is the temperature difference. More detailed analysis leads to expressions which give no appreciable increase in accuracy. C—**8G.**

(H)—Water Purification

[Water] Well Cleaning with Calgon. J. P. Kleber. *J. Amer. Wat. Wks Ass.*, 1950, **42**, pp. 481-484 (*Brit. Abstr.*, 1950, **B III**, October, p. 425). The author describes a method of cleaning water-wells with Calgon (sodium hexametaphosphate) to remove mineral deposits and so restore pumping capacity. A solution of 100-200 lb. of Calgon (16 lb. per 100 U.S. gal. of water in well casing) is added to the well, together with 20 lb. of bleaching powder (to kill iron bacteria and other organic growths); after 48 hours, the pump is turned on and off 10-12 times at four-hour intervals to raise water to ground level and then allow it to drop back into the well. After thorough flushing, the whole procedure is repeated if necessary. It gives better results than cleaning with inhibited acid. C—**8H.**

(I)—Waste Disposal

Textile Effluent Purification. M. Merkel. *Textil-Praxis*, 1950, **5**, No. 8, pp. 530-534. In German. The various types of impurity to be found in effluents from a textile factory are described, together with the dangers which may arise from their non-elimination. Methods of dealing with these impurities are discussed, chemical, biological, and mechanical processes being dealt with. C—**8I.**

Textile Effluent Purification: The Niers (Pista) Process. W. Schröder. *Textil-Praxis*, 1950, **5**, No. 8, pp. 534-538 In German. A survey is made of existing methods of dealing with effluent, that is, mechanical, chemical, physical and biological methods, and difficulties associated with these processes in the r

application to the textile industry are pointed out. The Niers (or Pista) process is then described. Precipitation by iron salts is the basis of the method; iron in the form of swarf (as obtained from lathes, *etc.*), is placed in the path of the effluent whilst oxygen is also supplied. The active ferric oxide has strong flocculating properties. C—8I.

Sewage: Determination of Anionic Synthetic Detergents. H. C. Evans. *J. Soc. Chem. Ind.*, 1950, **69**, 876-80. Small concentrations of synthetic anion-active detergents can be estimated by extracting the active material as the Methylene Blue complex from the aqueous solution by chloroform, and measureing the colour intensity of the organic solution. Active material in urine is also extracted by this method, as are some inorganic anions, such as nitrates and thiocyanates, which sometimes occur in sewage or effluents. The extraction of synthetic anion-active detergents is not affected by changes in the *pH* of the aqueous solution; the extraction of inorganic anions and compounds from urine and wool scouring liquor is decreased as the *pH* of the aqueous solution is lowered. This differentiation is the basis of a method for determining synthetic anion-active detergents in sewage. There are indications that the method may be successfully applied to sewage containing wool scouring effluents. W—8I.

PATENTS

Air Conditioning System Thermostatic Regulating Valves. Carrier Engineering Co. Ltd. B.P.642,467 and 642,518: Appl. and filing 30/9/1946; Publ. 6/9/1950; U.S.A. appl. 1/10/1945. These inventions relate to thermostatic regulating valves for use with the air-conditioning systems covered by B.P. 641,712 and 641,767,* in which air is conditioned at a central station and distributed at relatively high pressure and velocity to a number of units serving a number of enclosed space. (*See *J. Textile Institute*, 1951, **42**, A333.) C.

Air Cleaning and Circulating Blower. Metropolitan-Vickers Electrical Co. Ltd. B.P.642,496: Appl. and filing 5/8/1948; Publ. 6/9/1950; U.S.A. appl. 3/9/1947. A blower for cleaning and circulating air comprises a structure having (1) co-axial inner and outer annular passages, each communicating at one end with an annular separating chamber that receives particle-laden air, and (2) a power-driven impeller at the other end having an inner and an outer set of rotary blades, aligned with the inner and outer passages respectively, for propelling clean air along the outer passage and withdrawing separated particles along the inner passage. C.

Mineral-Fibre Heat and Sound Insulating Felt. Turner Brothers Asbestos Co. Ltd. (Inventors: L. P. Todd, and L. A. R. Waring.) B.P.642,722: Appl. 19/2/1947; Filing 13/1/1948; Publ. 13/9/1950. A heat and sound insulating material is formed of bonded felted asbestos, glass or slag wool fibre (at least ½ in. long), with or without mineral wool, profiled with pocket-like cavities up to ¾ in. in depth after impregnation with an alkali silicate or silicon ester followed by an after-treatment with zinc sulphate or sulphuric acid (to reduce the alkalinity and solubility) and drying. C.

Multi-Layer Heat-Insulating Material. Aktiebolaget Isoflex. B.P.642,901: Appl. and filing 14/3/1947; Publ. 13/9/1950; Swedish appl. 6/9/1945. A multi-layer heat-insulating material (for example of honeycomb construction) is built up of foils of polystyrol, polyvinyl chloride and/or a silicone polymer, 0·02 to 0·05 mm. thick, containing a material that blocks the passage of heat rays by reflection and/or absorption, for example metal powders, scales, or grains, graphite and suitable pigments. It is thus possible to secure the advantages of thermal stability and indifference to moisture presented by these types of synthetic resin, in comparison with cellulose acetate, and yet, by the incorporation, to overcome their much higher heat permeability. C.

Electrostatic Dust Precipitator. Westinghouse Electric International Co. B.P. 643,363: Appl. and filing 14/10/1947; Publ. 20/9/1950; U.S.A. appl. 30/10/1946. The non-discharging electrode (or electrodes) of an electrostatic dust precipitator is hollowed to allow the passage of a cooling fluid so as to prevent the "back-ionization" and consequent loss of efficiency that often occur in the cleaning of hot, dry gases. C.

9—SCIENCE

Wood Anatomy. W. H. Pearsall. *Sci. Progr.*, 1951, **39**, January. pp. 112-115. Recent analyses of wood structure are reviewed, and reference is made to the work of M. M. Chattaway on the development of tyloses and of gum secretion in the heartwood of trees, and to that of H. E. Dadswell and A. B. Wardrop on "reaction woods". C—9.

Amylo-1, 6-Glucosidase and Phosphorylase: Action on Glycogen and Amylopectin. Gerty T. Cori and Joseph Larner. *J. Biol. Chem.*, 1951, **188**, No. 1, pp. 17-29. The complete degradation of branched polysaccharides in animal tissues requires two enzymes, phosphorylase for the phosphorolysis of the α-1, 4 linkages, and a special type of glucosidase (named by the authors "amylo-1, 6-glucosidase") for the hydrolysis of the α-1, 6 linkages at the branch points. A method for the measurement of the activity of this glucosidase is described. There are eighteen references. C—9.

Enzymes and Viruses: An Apparent Relationship between Molecular Weights and Quantum Yields for Inactivation. A. Douglas McLaren. *Acta, chem. scand.*, 1950, 4, No. 2, pp. 386-389. No satisfactory derivation has been found for the apparent relationship between quantum yields, ϕ, for inactivation of enzymes, viruses and related proteins, and *B. coli*, and the corresponding molecular weights, M, as given by the formula $\phi = QM^{-1}$, Q being a constant. The evidence can be interpreted to mean that each molecule has a single sensitive volume, possibly related to the active centre in enzymes, which undergoes photolysis during activation. The larger the molecule the smaller is the fraction of the absorbed light which is absorbed by the sensitive volume, and hence the lower the quantum yield for inactivation. There are seven references. C—9.

Mucopolysaccharides and Dyes: Binding by Collagen. Julia Einbinder and Maxwell Schubert. *J. Biol. Chem.*, 1951, **188**, pp. 335-341. A study is made of fixation of anions of acid dyes and of mucopolysaccharides to purified and undegraded collagen from two different sources. Chondroitin sulphate and the dyes are fixed in maximum amounts proportional to the cationic groups of the collagen. These amounts are determined only by the strong acid groups of the anions. Hyaluronate fixation bears no relation to its anion content. A characteristic difference is pointed out between fixation of dye anions by collagen and by keratin. No evidence is found to suggest the idea that at neutral reaction collagen and mucopolysaccharides can form salts. There are twelve references. C—9.

Mucilage from the Bark of *Ulmus Fulva* (Slippery Elm Mucilage): Constitution. Part III. The Isolation of 3-Monomethyl D-Galactose from the Products of Hydrolysis. E. L. Hirst, L. Hough, and J. K. N. Jones. *J. Chem. Soc.*, 1951, February, pp. 323-325. The isolation and characterisation of 3-methyl D-galactose, a compound of Slippery Elm mucilage, is described. C—9.

Starch Solutions: Enzymically Induced Changes in the Turbidity. Sigmund Schwimmer. *J. Biol. Chem.*, 1951, **188**, No. 2, pp. 477-484. The turbidity changes which occur when a starch solution is digested by amylolytic enzymes have been investigated. It was found that α-amylase, β-amylase and *B. macerans* amylase each give a typical turbidity pattern. Some of the more pertinent factors affecting these patterns were also investigated. A tentative explanation for the appearance of turbidity maxima and minima with crystalline α-amylase, though not with β-amylase or purified *B. macerans* amylase, is advanced. It is based partly upon the formations of a small amount of retrograded amylose after the partial disappearance of amylopectin fractions of high molecular weight. C—9.

Starch: Enzymic Synthesis and Degradation. Part XII. The Mechanism of Synthesis of Amylopectin. P. N. Hobson, W. J. Whelan and S. Peat. *J. Chem. Soc.*, 1951, February, pp. 596-598. Evidence is presented which necessitates a modification of the hypothesis proposed earlier (*J. Chem. Soc.*, 1945, 877 and *Summary*, 1946, p. 91) whereby the synthesis of amylopectin from glucose-1 phosphate was pictured as involving the intermediate formation of short unbranched chains of glucose units (pseudoamylose). It is here shown that the synthesis proceeds as follows:

$$\text{Glucose-1 phosphate} \xrightleftharpoons{\text{phosphorylase}} \text{Amylose} \xrightarrow{\text{Q-enzyme}} \text{Amylopectin.}$$

C—9.

Silkworms: Existence of an Enzyme Catalysing the Hydrogenation of Oximes. Kazuo Yamafuji. *Nature*, 1951, **167**, No. 4254, p. 770. The author describes experiments which demonstrate that there is an enzyme in the silkworm body which catalyses the transformation of oximes to amino compounds. It is proposed to name this enzyme "oximase". C—9.

Amylose: Hydrolysis by Malt Alpha-Amylase: Improved Technique. R. J. Dimler, R. C. Bachmann and H. A. Davis. *Cereal Chem.*, 1950, **27**, No. 6, pp. 488-495. Amylose solutions of 3 per cent. to 4 per cent. concentration can be hydrolysed with malt alpha-amylase without retrogradation if a temperature of 70° C. is used. If the hydrolysis is stopped when the iodine colour reaches the achromic point and the products fractionated they will be found to consist of at least ten reducing compounds, including glucose, maltose and presumably the homologous series of oligosaccharides up to a degree of polymerisation of ten glucose units. There are eighteen references. C—9.

Phosphorus of Potato Starch. Theodore Posternak. *J. Biol. Chem.*, 1951, **188**, No. 1, pp. 317-325. The structure of the phosphohexaose and of the phosphotetraose obtained by α-amylase degradation of potato starch has been investigated, and it has been concluded that the phosphate groups are not in the vicinity of reducing groups or of branching points in the potato starch molecule. It would appear that the synthetic action of phosphorylase consists in the addition of glucose units to the primer end-group. There are twenty-three references. C—9.

Antigenic Polysaccharide Isolated from Tuberculin: Structure. P. W. Kent. *J. Chem. Soc.*, 1951, February, pp. 364-368. A substance which had been isolated from the human-type *M. tuberculosis* and which had previously been reported as being electrophorectically homogeneous and capable of eliciting antibodies, has been found to consist of a polysaccharide component (92 per cent.) and a liquid component (8 per cent.). The polysaccharide has been analysed and is thought to consist mainly of glucopyranose units linked in the 1:2 positions. The molecular weight of the native substance measured by a light-scattering technique was of the order of $4{\cdot}9 \times 10^5$. C—9.

Phenylalanine and Tyrosine in Yeast: Synthesis. Charles Gilvarg and Konrad Bloch. *J. Amer. Chem. Soc.*, 1950, **72**, No. 12, pp. 5791-5792. The biological origin of the benzenoid amino acids phenylalanine and tyrosine have been investigated by growing yeast (*S. cerevisiæ*) in a medium containing glucose and small amounts of acetate. Carbons of the substrate were labelled and the data indicate that a cyclisation of glucose takes place to form the benzene rings of phenylalanine and tyrosine. C—9.

Adaptive Enzymes in the Estimation of Gluconate, D-Arabinose, and D-Ribose. Seymour S. Cohen and Ruth Raff. *J. Biol. Chem.*, 1951, **188**, No. 2, pp. 501-508. The preparation and properties of strains of *Escherichia coli* capable of the specific analysis of gluconate, D-arabinose, and D-ribose have been described. Spectrophotometric and turbidimetric analyses of growth on gluconate in the absence of other available carbon sources have been described. Specific manometric techniques for the three substrates, utilising pairs of adapted and non-adapted bacteria, and capable of analysing about 200γ of the carbo-hydrate, have been presented. C—9.

Inorganic Compounds: Analysis by Paper Chromatography. F. H. Pollard, J. F. W. McOmie and I. I. M. Elbeth. *J. Chem.* Soc., 1951, February. Part I, pp. 466-470. Part II, pp. 470-474. **Part I. Movement of Cations with Complex-forming Solvent Mixtures.** The behaviour of the 24 cations of the ordinary qualitative tables with a number of different solvent mixtures, alone, and with complex-forming reagents, has been investigated. Three solvent mixtures, butanol-water containing benzoylacetone, collidine-water, and dioxan containing antipyrine, are suggested for the general scheme of qualitative analysis. The existence of new complexes of cations with collidine is reported. **Part II. Analysis of Cations and Anions.** The application is reported of three solvent mixtures, (A) butanol-water containing benzoylacetone, (B) collidine-water, and (C) dioxan containing antipyrine, to the general qualitative analysis of the 24 cations of the ordinary analysis tables. A large number of mixtures of cations have been chromographed without being first separated into groups. Various techniques have been used, namely, one-way chromatograms using one,

two or three solvents, either separately or in combination, or two-way chromatograms, using two or three solvents in combination. The methods have been tried with unknown mixtures. Suitable solvent mixtures for the separation of Cd and Zn; Th and U; K, Ti, V, Mo, and Fe, are reported. The separation of molybdenum from those elements usually associated with it in agricultural analyses is described. The R_F values for the movement of anions in a solvent mixture, butanol-pyridine-ammonia, are recorded for chloride, bromide, iodide, chlorate, bromate, iodate, nitrite, nitrate, arsenite, arsenate, carbonate, phosphate, chromate, thiocyanate, and sulphate. The separation of certain groups of these anions is reported. The independent movement of anion and cation is noted. C—9.

Carbohydrates of the Jerusalem Artichoke and Other Compositæ. J. S. D. Bacon and J. Edelman. *Biochem. J.*, 1951, 48, No. 1, pp. 114-126. Methods of examining the carbohydrates of the Jerusalem artichoke and related species by various techniques, including qualitative and quantitative paper partition chromatography, are fully described. Tabulated results and prints of typical chromatograms are shown. There are thirty references. C—9.

Centenary of Penny's Process: A Landmark in the History of Analytical Chemistry. Harry Irving. *Sci. Progr.*, 1951, 39, January, pp. 63-66. This paper is an appreciation of the work of Frederick Penny who in 1850 published his method for the estimation of iron by titration with potassium bichromate. His later work included the volumetric determination of iodides. There are fifteen references. C—9.

Tryptophane Metabolites: Chromatographic Method for Detection. Merle Mason and Clarence P. Berg. *J. Biol. Chem.*, 1951, 188, No. 2, pp. 783-788. The article describes a technique for the study of tryptophane metabolism which involves the chromatographic separation and identification of several fluorescent metabolites. The capacity of slices of rat liver and kidney to metabolise tryptophane were determined. Other breakdown products of tryptophane, kynurenine, kynurenic acid, anthranilic acid, xanthurenic acid and 3-hydroxyanthranilic acid were similarly tested with rat liver and kidney slices. It would appear that α-hydroxytryptophane may not be an intermediate in the conversion of L-tryptophane to kynurenine and kynurenic acid in the rat. Twenty references are given. C—9.

Aluminium in Water: Colorimetric Determination, Using Ammonium Aurin Tricarboxylate. A. C. Rolfe, F. R. Russell and N. T. Wilkinson. *J. Appl. Chem.*, 1951, 1, Part 4, pp. 170-178. A method is described for the colorimetric determination of aluminium in water, using ammonium aurin tricarboxylate at a controlled *pH*. The test is sensitive to 0·3 μg. aluminium, and satisfactory results have been obtained over a range of 0-20 μg. The test can be applied to the analysis of various alkali products after conversion to sodium chloride, if a calibration curve is prepared in the presence of the appropriate amount of sodium chloride. There are three references. C—9.

Methylamine in Urine: A Colorimetric Method for Determination. Andrew A. Ormsby and Shirley Johnson. *J. Biol. Chem.*, 1950, 187, No. 2, pp. 711-717. A simple colorimetric method for the determination of methylamine is given. Ammonia is used to increase the sensitivity of the determination. Di- and trimethylamines will interfere only if present in high concentration. Some values are reported for the normal excretion of methylamine in dogs and in man. There are five references. C—9.

Potentiometric Titrations: Determination of the Equivalent Point. Gunnar Gran. *Acta chem. scand.*, 1950, 4, No. 4, pp. 559-577. The equivalent point in potentiometric titrations can be determined very accurately by plotting $\Delta V/\Delta pH$ or $\Delta V/\Delta E$ versus V the volume of the reagent. In the vicinity of the equivalent point, the curves are very nearly straight lines and from the appearance of the curves conclusions can be drawn concerning reactions taking place during the titration. The application of a correction factor, for use in very accurate work, is discussed. There are seven references. C—9.

Corn: Extraction and Electrophoretic Analysis of Proteins. Joseph F. Foster, Jen Tsi Yang and N. Henry Yui. *Cereal Chem.*, 1950, 27, No. 6, pp. 477-487. Practically quantitative extraction of the proteins of corn can be effected with dilute aqueous solutions of alkyl benzene sodium sulphonate containing 0·2 per cent. bisulphite. Phosphate ion appears to render the proteins

insoluble, and alcohol has a similar but lesser effect. Electrophoretic analysis of the detergent extract indicates the presence of at least eight components, three of these being identified with zein, the others being concentrated in the aqueous extracts. There are six references. C—9.

Liquid-Gas Partition Chromatography. A. T. James and A. J. P. Martin. *Biochem. J.*, 1951, 48, No. 1, p. vii. A method for the separation of volatile fatty acids, using a gas-liquid partition chromatogram containing a static liquid phase and a mobile gas phase of nitrogen, is described. Formic, acetic, propionic, *n*- and iso-butyric, *n*- and iso-valeric, *n*- and iso-hexanoic, heptanoic and octanoic acids have been separated in 0·5 mg. quantities, using as the stationary solvent liquid paraffin-stearic acid or d.c. 550 silicone with acid washed Celite 545 as the carrier. C—9.

Peptides: Method for Determination of the Amino Acid Sequence. Pehr Edman. *Acta chem. scand.*, 1950, 4, No. 2, pp. 283-293. A micromethod for the determination of the amino acid sequence in peptides has been developed from the reaction of hydrochloric acid on phenylthiocarbamyl peptides, which involves the splitting off of one amino acid to give 3-phenyl-2-thiohydantoins. Its applications to a tripeptide and a tetrapeptide are described, and general applicability briefly discussed. There are fourteen references. C—9.

Iodine: A Method for Titration of Small Amounts in Acetic Acid Medium. Knut Brandt and Hans Dahlenborg. *Acta chem. scand.*, 1950, 4, No. 4, pp. 582-588. A new method for titrating small amounts of iodine has been described. Its sensitivity is about 25 micrograms or 2×10^{-7} equivalents of iodine per sample. C—9.

Methyl Cellosolve as a Developing Solvent in Paper Partition Chromatography. A. E. Bender. *Biochem. J.* 1951, 48, No. 1, p. xv. Methyl cellosolve (ethylene glycol monomethyl ether) has been found to satisfy many of the requirements of a developing solvent, and can replace collidine with advantage in paper chromatography of amino-acids. C—9.

Nitrate Ion: A New Titrimetric Method for the Determination. Zoltan G. Szabó and Lajos Bartha. *Analyt. Chim. Acta*, 1951, 5, No. 1, pp. 33-45. The reduction of nitrate by ferrous hydroxide at a sodium hydroxide concentration of 3 per cent. in the presence of silver as catalyst is quantitative, and enables the determination of nitrates. Measured ferrous salt reduces the nitrate and the excess is back-titrated. The most common ions accompanying the nitrate do not interfere with the method. There are sixteen references. C—9.

"Carrier Displacement" Chromatography. A. Tiselius and L. Hagdahl. *Acta chem. scand.*, 1950, 4, No. 2, pp. 394-395. The authors have improved on a method of separating amino acids, peptides, carbohydrates, fatty acids, *etc.*, in the presence of a substance with a higher adsorption affinity than that of any of these substances, through an adsorption column. The rings in columns containing the substances in solution are separated by rings containing "carriers" dissolved with the substances and having adsorption affinities intermediate between the substances themselves. This method allows more complete separation of substances from the column, particularly where present in small amount. The carriers used were mixtures of homologous alcohols in aqueous solution. There are six references. C—9.

Phosphoric Acid Determination. R. Marquié. *Bull. Soc. chim. France*, 1951, [5th Series], 18, Nos. 1-2, pp. 149-152. In French. The Lorenz-Schoeffer method for determining phosphoric acid in pure and naturally occurring substances, has been checked by reference to other, reputedly accurate, methods. Based on phosphomolybdate precipitation, it has been found to be both rapid and sufficiently accurate for most purposes. No systematic error has been detected. With pure substances the results are precise, and an accuracy to $\pm 0{\cdot}3$ per cent. can be obtained in the estimation of naturally occurring phosphates. C—9.

Photo-electric Micronephelometer. A. C. Mason. *Analyst*, 1951, 76, March, pp. 172-176. The article describes a photo-electric nephelometer suitable for small volumes, 0·1 to 0·5 ml. C—9.

Polyamide and Polyurethane: Paper Chromatography. H. Zahn and H. Wolf. *Melliand Textilber.*, 1951, 32, No. 4, pp. 317-321. In German. Various commercial polyamides can be distinguished by means of paper chromatography

when the products of their hydrolysis by hydrochloric acid are tested for hexamethylenediamine, ε-aminocaproic acid, adipic acid, and sebacic acid. A solvent mixture containing *sec.* butyl alcohol, formic acid and water is suitable for separating the bases and amino acids, whilst the dicarboxy acids can be taken up in a mixture of *iso*-butyl alcohol, glycol and concentrated ammonium hydroxide solution (25 per cent.). Twenty-five references are given. C—9.

Proline and Hydroxyproline: Determination of the sum of Their α-Nitrogen. Paul B. Hamilton and Priscilla J. Ortiz. *J. Biol. Chem.*, 1950, **187**, No. 2, pp. 733-742. A method is presented for the determination of total α-imino carboxyl nitrogen (proline nitrogen plus hydroxyproline nitrogen) in mixtures of amino acids, for example hydrochloric acid protein hydrolysates, without preliminary isolation or separation. There are twenty-four references. C—9.

Quantitative Separation of Precipitates in Gravimetric Analysis. V. N. Njegovan. *Analyt. Chim. Acta*, 1951, **5**, No. 1, pp. 55-59. In German. Crystals, set free in gravimetric analysis in a very impure state, can be subjected to a process of self-purification by separating the precipitate in a highly dispersed state and subsequently digesting it on the water-bath. In the determination of sulphates, magnesium and manganese, this method was successfully applied to barium sulphate, magnesium ammonium phosphate and manganese ammonium phosphate respectively. There are sixteen references. (From the English summary.) C—9.

Quinoline Yellow as a Reversible Indicator in Bromometric Titrations. R. Belcher. *Analyt. Chim. Acta*, 1951, **5**, No. 1, pp. 30-32. Quinoline Yellow has been found to behave reversibly as an indicator in the titration of trivalent arsenic or antimony with potassium bromate. Some slight destruction of the indicator occurs, but several titrations and back-titrations can be carried out before the colour becomes too faint for the change to be seen. There are seven references. C—9.

Quinoline Yellow as a Reversible Indicator in Hypochlorite-Arsenite Titrations. R. Belcher. *Analyt. Chim. Acta*, 1951, **5**, No. 1, pp. 27-29. Because of the conflicting statements regarding the use of Quinoline Yellow as an indicator in hypochlorite-arsenite titrations and the lack of information as to whether it is reversible or not, its properties have been examined, and the indicator has been found to behave satisfactorily under the conditions described by Sinn, who first recommended its use. There are five references. C—9.

α-Amino Acids: Separation on Powdered Cellulose Columns. S. Blackburn. *Chem. & Ind.*, 1951, No. 15, pp. 294-295. The separation of free amino acids on columns of powdered cellulose is described. C—9.

N-2:4 Dinitrophenyl Amino-Acids: Separation on Paper Chromatograms. S. Blackburn and A. G. Lowther. *Biochem. J.*, 1951, **48**, No. 1, pp. 126-128. The article describes a method which gives compact spots without "tailing", which possess characteristic rates for the separation of N-2:4-dinitrophenyl amino-acids on buffered paper chromatograms. There are eight references. C—9.

Nylon Type Polymers: Some Further Observations on Analysis. J. Haslam and M. Clasper. *Analyst*, 1951, **76**, January, pp. 33-40. Methods have been devised for the analysis of the mixtures of hexamethylene diamine dihydrochloride and 5-amino caproic acid hydrochloride that may be obtained when the methods of hydrolysis previously reported are applied to certain types of nylon polymer. The determination of the 5-amino caproic acid hydrochloride is based on titration with standard alkali; the determination of hexamethylene diamine dihydrochloride depends on the passage of a solution of the mixed hydrochlorides through a column of Amberlite IRA 400 resin, and subsequent titration of the hexamethylene diamine with standard alkali. Samples of polymer produced (*a*) by the interaction of hexamethylene di*iso*cyanate and 1:4-butanediol, and (*b*) from ω-amino undecanoic, have been submitted to hydrolysis by hydrochloric acid and the hydrolytic products examined along the lines laid down for nylon type polymers in a previous paper (*Analyst*, 1949, **74**, p. 224). C—9.

Methionine: Spectrophotometric Microdetermination. Bohdan Bakay and Gerrit Toennies. *J. Biol. Chem.*, 1951, **188**, No. 1, pp. 1-15. The authors describe a spectrophotometric micromethod for the determination of methionine, based on its reversible reaction with iodine (Lavine). Because of its non-

biological basis, the method is independent of methionine-containing peptides or certain other growth factors which might affect bacterimetric determinations. For the same reason it does not differentiate between the D and L form of the amino acid. There are twelve references. C—9.

Paper Chromatograms: A Spraying Reagent Which Is Apparently Specific for Ketoheptoses. Rolf Klevstrand and Arnold Nordal. *Acta chem. scand.*, 1950, 4, No. 8, p. 1320. A reagent containing orcinol, trichloracetic acid and water-saturated *n*-butanol, sprayed on to paper, appears to be specific for ketoheptoses in paper chromatographic studies. There are two references. C—9.

Substituted Benzidines and Related Compounds as Reagents in Analytical Chemistry. R. Belcher and A. J. Nutten. *J. Chem. Soc.*, 1951, *February*, Part I, pp. 544-546; Part II, pp. 546-547; Part III, pp. 547-548; Part IV, pp. 548-549. **Part I. Solubilities of the Sulphates.** An examination has been made of the reactions of substituted benzidines and related compounds, with the object of developing new reagents in analytical chemistry. The solubilities of the sulphates of a series of these amines have been determined in an attempt to establish possible fundamental relationships between molecular structure and solubility, and to obtain new reagents for the rapid determination of the sulphate ion. **Part II. Reaction with Oxidising Agents.** The sensitivities, towards various oxidising agents, of the substituted benzidines and related compounds described in the first paper of this series, have been determined. Several amines were found to be more sensitive in their reaction than benzidine. **Part III. 3-Methylbenzidine and 3:3′-Diethylbenzidine as Indicators in Argentometry.** 3-Methylbenzidine and 3:3′-diethylbenzidine are recommended in place of benzidine as indicators for the titration of silver solutions with bromide or iodine. The colour changes at the end-point are more satisfactory than those given by benzidine, and considerably sharper than those given by the conventional adsorption indicators; moreover, the new indicator can be used in more dilute solution. **Part IV. Naphthidine as Indicator in the Determination of Zinc with Ferrocyanide.** Naphthidine can be used as an internal indicator in the titration of zinc with ferrocyanide, and gives a more distinct colour change than any of the conventional indicators used for this purpose. C—9.

Polarography: Use for Automatic Recording in the Chromatography of Proteins. Birger Drake. *Acta chem. scand.*, 1950, 4, No. 3, pp. 554-555. The polarographic protein reaction has been applied to small volumes of liquid emerging from a chromatographic column. All proteins containing cysteine or cystine can be analysed by this method. The voltage is fixed at a suitable value and the current continuously recorded as a function of time. There are ten references C—9.

Silver Nitrate and Sodium Dichromate: Use in the Detection of Purines by Paper Partition Chromatography. Rose M. Reguera and Isaac Asimov. *J. Amer. Chem. Soc.*, 1950, 72, No. 12, pp. 5781-5782. A method using silver nitrate and sodium dichromate in the detection of purines by paper partition chromatography is described, and is considered to obviate several difficulties in the Vischer and Chargaff "Sulphide-spot" technique. C—9.

Ion Exchangers in Analytical Chemistry: Utilisation. XV. Ralph Djurfeldt and Olaf Samuelson. *Acta. chem. scand.*, 1950, 4, No. 1, pp. 165-184. Some questions of practical importance for the ion exchange technique described in earlier papers have been investigated. The effect of particle size is shown and an optimal size recommended. The ion exchange is shown to be quantitative even for rather acid solutions. The conditions for regeneration of the ion exchange column with hydrochloric acid have been studied. A maximum speed of regeneration is obtained for a regenerant concentration of 3 to 4 molar and it is shown that the time of regeneration is ordinarily a more important factor than the amount of regenerant used. It is especially important in the case of Fe^{3+} to follow the directions of regeneration given. There are thirty-eight references. C—9.

Oxides: Acidic and Basic Properties. IV. The Thermal Decomposition of Dichromates. H. Flood and A. Muan. *Acta chem. scand.*, 1950, 4, No. 2, pp. 364-373. The equilibrium between CrO_4^{2-}—$Cr_2O_7^{2-}$— melts and O_2 gas shows that the stability of the dichromates on thermal decomposition increases in the order Tl, Na, K. The stability of the oxygen bridge Cr-O-Cr depends on the

size and polarising power of the cation. The results are compared with those obtained in the $S_2O_7^{2-}$—SO_4^{2-} system. The equilibrium constant K' is determined at two different O_2 tensions and the activity coefficient of the melts are discussed. Equilibrium investigations were made in mixtures of K-Na and K-Tl dichromates by varying the cation composition at constant temperature. The activity coefficients in the melts are discussed. There are ten references. C—9.

Carbon Disulphide. A. G. Arend. *Chem. Prod.*, 1951, 14, No. 4 pp. 130-132. Tests for checking the purity of carbon disulphide are briefly indicated. The author then discusses various commercial methods for the production of carbon disulphide, and finally solvent and other industrial applications of this compound are described. C—9.

Corrosion due to Tuberculation in Water Systems. I. J. L. Mansa and Waclaw Szybalski. *Acta chem. scand.*, 1950, 4, No. 8, pp. 1275-1292. The effect of Calgon on the potential of iron electrodes in differential aeration cells with running tap water has been studied, and it is found to decrease the potential difference and corrosion current. A general theory of tubercle-forming and non-corrosive waters is put forward, and the phenomenon of critical corrosion rate with a successive increase of water flow is explained. There are twenty-two references. (See following abstract.) C—9.

Corrosion due to Tuberculation in Water Systems. II. J. L. Mansa and Waclaw Szbalski. *Acta chem. scand.*, 1950, 4, No. 8, pp. 1293-1299. The effect of Calgon on the potential of zinc and copper electrodes in differential aeration cells with running tap water has been studied. As in the case of iron, Calgon decreases the potential difference, or even changes it to negative values, thus eliminating the corrosion. Some other aspects of the differential aeration cells with zinc, iron and copper electrodes are discussed. There are eight references. (See preceding abstract.) C—9.

Corrosion of Steel in Laminar Flowing Water. J. L. Mansa. *Acta chem. scand.*, 1950, 4, No. 8, pp. 1263-1274. A cell with laminar flow has been used in the study of the mechanism of rust formation on submerged iron surfaces. There are three references. C—9.

Electro-Corrosimeter. Josef Stepanek. *Prakt. Chem.* 1951, No. 2, pp. 24-31. In German. An electro-corrosimeter (unnamed) is described. It is based on the principle that corrosion is due not primarily to potential difference at a surface, but to the flow of current arising from that potential difference. The adjustment and operation of the machine and preparation of electrodes, as also the construction of an electro-corrosigram (which indicates the rate and course of corrosion) are described in great detail. One of the major advantages of the method is that permitted corrosion (that is, extent of corrosion for test purposes), need only be very slight, not even visible to the naked eye, for an accurate estimate to be made of the corrosion tendency of a surface, or of the protective action of coatings and so on. Amongst the several measurements discussed are resistance to corrosive environment (liquids, chemicals, gases, steam), corrosive wear of machinery (rate per annum), efficiency and expected life of corrosion inhibitors, and porosity of protective layers. C—9.

Ferric Ion: Hydrolysis in Sulphate Solution. T. V. Arden. *J. Chem. Soc.*, 1951, February, pp. 350-363. In the hydrolysis of ferric sulphate solution by sodium hydroxide, several intermediate salts are obtained; these are described. The reaction constants for the formation of $FeOH^{++}$ and $Fe(OH)_2^{+}$ have been found by *pH* measurements. C—9.

Manganous-Permanganate Reaction: Kinetics. Arthur W. Adamson. *J. Phys. Colloid Chem.*, 1951, 55, No. 2, pp. 293-303. The exchange between radio-manganous and permanganate ions has been found to be slow but measureable in 3 M perchloric acid solution, a kinetic giving the expression $R=k[H^+]^a[Mn^{++}]^b[MnO_4^-]^c$ for the velocity of the rate-determining step in the exchange path, where *a*, *b*, and *c* have the approximate values 4/3, 4/3 and 1/3 respectively. A mechanism is proposed which comprises a rapid pre-equilibrium of the type Mn(II)+Mn(VII)=Mn(III)+Mn(IV) followed by a slow electron exchange between hydrolysed forms of the products of the equilibrium. Manganous and manganic ions are found to exchange at a high but measurable rate in acid solution, whereas the exchange between manganate and perman-

ganate in alkaline solution was instantaneous, irrespective of the separation method used. These results are discussed in the light of observations on the various electron-exchange processes reported in the literature. There are eighteen references. C—9.

Ferric-Salt Catalysed Hydrogen-Peroxide Decomposition: Revision of the Mechanism. J. A. Christiansen and V. Sten Anderson. *Acta chem. scand.*, 1950, 4, No. 10, pp. 1538-1540. Kinetics experiments at different temperatures have shown that the mechanism of the ferric-salt catalysed hydrogen-peroxide decomposition must be represented by a sequence which contains an active form of hydrogen peroxide anion, instead of oxygen atoms as formerly assumed. C—9.

Metals: Studies in Corrosion Occasioned by Aqueous Solutions of Some Surface-Active Agents. I. Copper. H. Holness and T. K. Ross. *J. Appl. Chem.*, 1951, 1, Part 4, pp. 158-169. The action of dilute aqueous solutions of representative anionic, cationic and non-ionic wetting agents on sheet copper has been studied. Rise of temperature was found to increase corrosion but variation of *pH* from 2 to 12 was without marked effect. There are thirty-two references. C—9.

Substituted Amines as Inhibitors In the Acid Corrosion of Steel. Lloyd E. Swearingen and Alfred F. Schram. *J. Phys. Colloid Chem.*, 1951, 55, No. 2, pp. 180-187. The inhibiting action of ethylamine, and of four of its substituted derivatives, in the corrosion of steel cathodes by 1·0 N sulphuric acid solution, has been investigated. The substituted derivatives were all better inhibitors than the parent substance, and this is thought to be due not to size or shape of the molecules but to their greater adsorbability. There are twenty references. C—9.

Strong Acids: Action on Acetylated Glycosides. VI. Transglycosidation of Galactosides. Lennart Asp and Bengt Lindberg. *Acta chem. scand.*, 1950, 4, No. 9, pp. 1386-1389. The transglycosidation of some galactosides with sulphuric acid and titanium tetrachloride has been investigated. The reaction is somewhat faster than that of the corresponding glucosides but otherwise perfectly analogous. There are three references. (See following abstract.) C—9.

Strong Acids: Action on Acetylated Glycosides. VII. Transglycosidation of Xylosides. Lennart Asp and Bengt Lindberg. *Acta chem. scand.*, 1950, 4, No. 9, pp. 1446-1449. The transglycosidation of some xylosides with sulphuric acid and titanium tetrachloride has been investigated. The reaction is much faster than that of the corresponding hexosides investigated, but otherwise perfectly analogous. There are three references. (See preceding abstract.) C—9.

Ethylene Dichloride Extract of Cottonseed Meal: Antioxidant Properties. H. J. Lips. *Can. J. Res.*, F 1950, 28, pp. 451-452. An antioxidant has been extracted from cottonseed meal and its stabilising action on lard has been examined. C—9.

The Beta to Alpha Transformation of Fully Acetylated Glycosides by Alkali. Bengt Lindberg. *Acta chem. scand.*, 1950, 4, No. 1, pp. 49-51. A phenyl β-glycoside, 2,4-dinitrophenyl β-glucoside tetra-acetate, has been transformed into the corresponding α-glucoside with the aid of sodium hydroxide in absolute pyridine. There are two references. C—9.

Organo-Silicon Compounds: Chemistry and Technology. F. A. Jones. *Trans. Inst. Rubber Ind.*, 1947, 23, No. 1, pp. 46-52. The preparation of silicones and their polymers is described. Properties and uses of the principal types of silicone polymers, namely, silicone oils, silicone rubbers, silicone greases and silicone resins, are given at length. There are fourteen references. C—9.

Protein Plastics: Cross-Linking. S. H. Pinner. *British Plastics*, 1950, 23, November, pp. 157-162. A study is made of the cross-linking of protein side chains radicals in the hardening of casein and zein with formaldehyde. Amino groups in proteins react readily with formaldehyde to form methylol, bonds, and it is thought that these, together with extensive hydrogen bonding, explain most of the properties of hardened casein. Zein, when heated with formaldehyde, forms amido-methylol groups, but cross-linking is not thought to be extensive, since hardened zein retains a capacity for swelling. There are sixteen references. C—9.

Cyanine Dyes. F. M. Hamer. *Quart. Rev. Chem. Soc.*, 1950, **4**, No. 4, pp. 327-355. The different types of cyanine dyes and the methods used in their synthesis are reviewed, with special reference to their use in photography. Future development may lead to the synthesis of complex cyanines with new types of branched polymethin chains, and to learning how to make the best of comparatively simple dyes. There are five references. C—**9.**

Jute: Effect of Partial Acetylation. W. G. Macmillan and A. B. Sen Gupta. *Nature*, 1951, **167**, No. 4254, p. 775. Experiments have been carried out to determine the relative proportion of the hydroxyl groups of the cellulose, hemicellulose and lignin components of jute which are free for acetylation. Purified cotton, α-cellulose isolated from jute, and bleached and untreated jute were partially acetylated, and the acetyl content of each determined. It was found that the isolated α-cellulose was capable of reacting with only a small amount of acetyl, and that the hemicellulose was responsible for taking up the major proportion of the acetyl groups involved. A table summarising the results is given. C—**9.**

Plant Cellulose Isolated by the Method of Druce and Willcox: Hydrolytic Examination. Edward Druce and James Stuart Willcox. *J. Agric. Sci.*, 1951, **40**, Parts 1 and 2, pp. 157-159. The cellulose isolated by the method of Druce and Willcox has been examined by a hydrolytic method, and the results confirm the high "hexosan" content of the residue. The recovery of "hexosan" from "bran cellulose" has been shown to be very low (58 per cent.) and this is not due to the presence of large amounts of phytic acid. It is suggested that "bran cellulose" contains components which do not yield reducing sugars on hydrolysis. There are seven references. C—**9.**

Lignin and Cellulose Contents of Certain Grassland Species at Different Stages of Growth. D. G. Armstrong, H. Cook and Brynmor Thomas. *J. Agric. Sci.*, 1951, **40**, Parts 1 and 2, pp. 93-99. The lignin and cellulose contents of the dry matter of seven herbage species have been determined at different stages of growth. A marked rise in lignin content was found to occur at the flowering stage. The recovery of lignin and cellulose in the crude fibre of the different species has been studied and found to vary considerably. There are twenty-three references. C—**9.**

Oxidation in Organic Chemistry: Reagents. A. W. Johnson. *Sci. Progr.*, 1951, **39**, January, pp. 96-103. This review on oxidation covers the latest developments of reagents for specific types of oxidation, such as hydroxylation of double bonds, fission of α-diols, *etc.* The uses of hydrogen peroxide, peracids and related reagents in the presence of various catalysts are summarised. The application of lead tetra-acetate and periodic acid, highly specific for the fission of 1:2-diols, α-hydroxy carbonyl compounds, 1:2 diketones and α-hydroxy-amines containing primary or secondary amino groups, is similarly set forth. C—**9.**

Azo Dyes: A New Method of Preparation. Eugene Lieber and Konrad Parker. *J. Amer. Chem. Soc.*, 1950, **72**, No. 12, pp. 5779-5780. A new method is described for the preparation of azo dyes from α-naphthylamine and N-methyl-N-nitroso-N′-nitroguanidine, and from α- and β-naphthylamine hydrochlorides reacting with similarly constituted nitrosamines, such as nitrosoguanidine and methylnitrosourea. C—**9.**

Peptide Synthesis. Oscar Süs. *Liebigs Annal. Chem.*, 1951, **572**, No. 2, pp. 96-105. In German. In the course of work on penicillin synthesis, it was found that N-phenaceturyl-5:5-dimethyl thiazolidine-4-carboxylic acid methyl ester could be prepared by direct condensation of phenaceturic acid (phenylacetylglycine) with the methyl ester of 5:5-dimethyl-thiazolidine-4-carboxylic acid in an inert solvent in the presence of phosphorus trichloride. Further investigation showed the method to be generally applicable to the preparation of amide type derivatives of phenaceturic acid and other acyl amino acids (for example, hippuric acid). By using aliphatic amino acid esters as the basic components, it was found possible to prepare several simple peptides. These products are listed, and details are given of the experimental data and some of their identifying properties (appearance, melting point, and so on). C—**9.**

Nitration as an Analytical Tool in the Study of Wood Pulps [Part] III: Nitration of Semichemical Pulps. Ø. Bryde and T. H. Smith. *Report No. 29*

of Papend. Forskningsinst., 1950, 5 pages (reprint from *Norsk Skogind.*, 1950, No. 11). In English. A detailed description is given of a procedure for the fractionation of wood pulps. Samples of pulp are nitrated and the non-cellulosic material is removed by various purification processes. In the present paper mention is made of the application of the method to the study of the sulphite process and the very first parts of the monosulphite and the sodium processes. An acetone-insoluble fraction appearing in some of the nitrated samples is supposed to indicate a link between lignin and cellulose. Measurements of the change in viscosity of the acetone soluble part also give information about the chain length of the cellulose component of the lignin-cellulose complex. A close relationship between the amount of insoluble material and the strength properties of semichemical pulps is shown. C—9.

Prefixes: On the Use of the Capital Letters L and D. Hubert B. Vickery. *Science*, 1951, 113, No. 2934, pp. 314-315. The letters D or L are used to signify that the configuration of the asymmetric centre in the substance has been correlated with the configuration of D- or L-glyceraldehyde, in the case of a carbohydrate, or D- or L-serine when the substance is an α-amino acid. It is pointed out that there is a tendency to use the capital letter nomenclature indiscriminately and to apply it to substances whose configurations have not been correlated with glyceraldehyde or serine. To illustrate the confusion which can arise over the use of the various symbols D, L, *d*, *l*, (+), and (−), different ways of expressing the configuration of the dextrorotatory enantiomorph of isocitric acid are discussed. C—9.

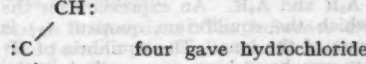
Starch: Phosphorylation. Rolland Lohmar, John W. Sloan and C. E. Rist. *J. Amer. Chem. Soc.*, 1950, 72, No. 12, pp. 5717-5720. The preparation of water-insoluble phosphates of a variety of starches by reaction with phosphorus oxychloride in pyridine is described. The pretreatment given to the starches is found to control their reactivity and the nature of the products formed. The reactivity of various starches decreases with increasing granule size. C—9.

Isoleucine: Preparation of the Four Stereoisomers. Jessie P. Greenstein, Leon Levintow, Carl G. Baker and Julius White. *J. Biol. Chem.*, 1951, 188, No. 2, pp. 647-663. The four stereoisomers of isoleucine, D- and L-isoleucine, and D- and L-allo isoleucine, have been prepared from two kinds of synthetic isoleucine. The stereoisomers were characterised by the formation of their acetyl, formyl, and phenyl isocyanate derivatives. Some biochemical properties are described. There are twenty-eight references. C—9.

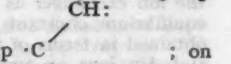
Polysulphides and Polythionic Compounds: Prevalence of Unbranched Sulphur Chains. Olav Foss. *Acta chem. scand.*, 1950, 4, No. 3, pp. 404-415. The chemical reactivity of disulphides, polysulphides and polythionic compounds is consistent with formulæ containing unbranched sulphur chains. The non-existence of branched structures is discussed in terms of the properties of co-ordinate and double sulphur-sulphur bonds. A mechanism is suggested for the reactions of sulphur and of polysulphides with sulphite and cyanide. There are sixty-six references. C—9.

Azo Dyes. I. J. Nils Ospenson. *Acta chem. scand.*, 1950, 4, No. 9, pp.1351-1364. The author has examined the effect of an *o*-methyl group, *o*- and *m*-carboxyl groups, and combinations of the two, on the absorption spectra of phenylazophenol and phenyl-azo-β-naphthol, and the absorption curves of the dyes in 96 per cent. alcohol are given. The effect of these groups on the azo-hydrazone tautomerism is also discussed. The increase in the hydrazone form for dyes containing an *o*-carboxyl group is explained in terms of hydrogen-bond formation. The possibility of a bifurcated hydrogen bond in the β-naphthol dye is discussed. There are twelve references. C—9.

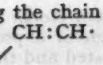
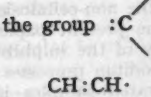
Trinuclear Cyanine Dyes. Part IV. The Action of Acid on Dinuclear Intermediate Dyes. Frances M. Hamer. *J. Chem. Soc.*, 1951, February, pp. 294-299. Of seven dinuclear intermediate dyes having the group



four gave hydrochlorides having the group



; on more drastic treatment with acid, three gave the corresponding dimethin*mero*-

cyanine having the chain :CH·CH:. Five dinuclear intermediate dyes having the group  gave perchlorate hydroperchlorates having the group  ; on more drastic treatment with acid, four gave the corresponding trimethincyanines having the chain :CH·CH:CH. C—9.

Wheat Gluten in Dilute Acetic Acid by Brief Heat Treatment: Stabilisation of Solutions. Harold S. Olcott. *Cereal Chem.*, 1950, **27**, No. 6, pp. 514-516. The author describes a simple method of heat treatment for solutions of wheat gluten in dilute acetic acid to minimise its instability (as evidenced by a progressive drop in viscosity). The heat treatment does not, unfortunately, stabilise the solutions completely. There are five references. C—9.

Heparin: Structure. M. L. Wolfrom, Rex Montgomery, J. V. Karabinos and P. Rathgeb. *J. Amer. Chem. Soc.*, 1950, **72**, No. 12, pp. 5796-5797. Further suggestions regarding the structure of heparin are put forward, following on the preparation of heparosinsulphuric acid and barium acid heparinate. C—9.

Trehalose-Type Disaccharides: Synthesis. Violet E. Sharp and M. Stacey. *J. Chem. Soc.*, 1951, February, pp. 285-288. Fusion of acetohalogeno-sugars in air with molten sodium leads to the production of non-reducing disaccharides of the trehalose type. These have been synthesised by alternative methods, and the constituent monosaccharides appear to have $\alpha\beta$-configuration. C—9.

Condensation Point Differences on Small Samples: Accurate Determination. S. Sunner and N. Magnusson. *Acta chem. scand.*, 1950, **4**, No. 9, pp. 1464-1470. A differential Siwoloboff-method, allowing the determination of condensation point differences with an accuracy of 0·001° C. on samples as small as 0·1 ml., is described. The method is useful for the estimation of the purity of fractions in fractional distillation of small samples. There are three references. C—9.

Alkalis: Action on Cellulose, Particularly on Regenerated Celluloses. Albert Schaeffer. *Textil-Rdsch.*, 1951, **6**, No. 4, pp. 159-169; No. 5, pp. 219-225. In German. The effect of alkaline solutions on cellulosic fibres, particularly the regenerated celluloses, has been investigated by subjecting Vistra (viscose rayon), Cuprama (cuprammonium rayon), Lanusa (crimped viscose rayon), and cotton to a series of fifty half-hour periods of boiling in various solutions. Appropriate tests were carried out between each period, after careful rinsing and drying. The tests included the following determinations: quantity of decomposed and solubilised cellulose; degree of polymerisation; wet-strength; elongation at break (wet); absorption of alkali; ash content; and microscope observations. The alkalis used were sodium hydroxide, sodium silicates and soda. The results (indicated by numerous graphs and photomicrographs), show that caustic soda solutions cause maximum damage; sodium monosilicate, soda, sodium di- and trisilicates, and water-glass, effect decreasing damage in that order. Whereas concentration of solution is of prime importance, the relationship between bath volume and weight of material appears to have little or no significance. No direct relationship between damage and *pH* appears to exist. Other results are also discussed. Some forty references are given. C—9.

Ion Exchangers: Activities of the Components. Erik Ekedahl, Erik Högfeldt, and Lars Gunnar Sillén. *Acta chem. scand.*, 1950, **4**, No. 3, pp. 556-558. The law of mass action is applied to the equilibrium between an ion exchanger (R^-) and two different univalent ions (A_1^+ and A_2^+): $A_2^+ + A_1R \rightleftharpoons A_1^+ + A_2R$, regarding the ion exchanger as a solid solution of A_1R and A_2R. An expression for the equilibrium constant is derived, from which the equilibrium quotient (χ) is obtained in terms of the activity coefficients of the ions. The equilibria of H^+ and Ag^+ ions on two different ion exchangers have been measured, but the results deviate from those expected if the mass action law were obeyed. It is concluded therefore that an ion exchanger containing two different ions cannot be

considered as an ideal solid solution of the components A_1R and A_2R, since the law of mass action is not applicable. From curves of log χ against β, and β_2 (the molar fractions of A_1R and A_2R) values of the activity coefficients and activities of these components have been obtained. (See following abstract.) C—9.

Ion Exchangers with Multivalent Ions: Activities of the Components. Erik Högfeldt, Erik Ekedahl, and Lars Gunnar Sillén. *Acta chem. scand.*, 1950, 4, No. 5, pp. 828-829. The mathematical treatment of the equilibrium between an ion exchanger and two different ionic species, previously applied to the case of univalent ions*, is here extended to the case of multivalent ions. The same graphical method is used to determine the activities of the components of the exchange system. (*See preceding abstract.) C—9.

Polystyrene Solutions: Dielectric Constant. P. Debye and F. Bueche. *J. Phys. Colloid Chem.*, 1951, 55, No. 2, pp. 235-238. The authors cannot reproduce the discontinuity found by A. Voet in the dielectric constant *versus* concentration curve for polystyrene in toluene, and suggest that impurities and the handling of the samples might be responsible for the observation of a break in the curve. There are two references. C—9.

Crystal Violet: Fading in Alkaline Solutions. T. Langvad. *Acta chem. scand.*, 1950, 4, No. 2, pp. 300-306. The reaction between crystal violet and hydroxyl ions in pure water and dilute salt solutions has been studied at 15°, 25°, 35° and 45° C. There are seven references. C—9.

Fine Structural Differences between Natural Cellulose Fibres as Revealed from Chain Length Distributions of Hydrolysed Materials. Lief Jörgensen. *Acta chem. scand.*, 1950, 4, No. 4, pp. 658-665. Chain-length distribution determinations have been carried out on spruce sulphite pulp, aspen holocellulose and cotton linters swollen in alkaline solutions and subsequently hydrolysed. Distribution curves show that the fine structure of purified wood fibres differs from that of cotton linters by (1) the presence of well arranged chains interconnecting the highly ordered regions and resistant towards acid hydrolysis if not swollen in alkaline solutions, and (2) the presence of a large amount of very small highly ordered regions. Upon hydrolysis all intracrystalline swollen fibres show an accumulation of very small fragments, 100-200 Å long. There are fourteen references. C—9.

Polyisobutylene: Further Studies on Melt Viscosity. Thomas G. Fox, Jr., and Paul J. Flory. *J. Phys. Colloid Chem.*, 1951, 55, No. 2, pp. 221-234. The study of the melt viscosity of polyisobutylene fractions has been extended to cover the molecular weight (M) range from 530 to 1,480,000 at temperatures from 217° to −40° C. Specific volumes have been determined at 217° C. and at lower temperatures for fractions ranging in M from 3,400 to 115,000. Both the specific volume and the viscosity-temperature coefficient are found to be simple functions of M^{-1}, and in each case as M increases the value of the property approaches an asymptotic limit which is practically reached at $\overline{M}_n \simeq 17{,}000$. There are ten references. C—9.

Hydrogen-Calomel Cell. G. J. Hills and D. J. G. Ives. *J. Chem. Soc.*, 1951, February; Part I pp. 305-310; Part II pp. 311-318; Part III pp. 318-325. **Part I. The Hydrogen Electrode.** Some errors to which the hydrogen electrode is susceptible are discussed, and comments are made on the theory of its operation. A new form of hydrogen electrode is described. **Part II. The Calomel Electrode.** The calomel electrode is shown to be capable of a very high degree of reproducibility when various sources of error are eliminated. A theory of the mechanism of operation of the electrode is suggested. **Part III. The Standard E.M.F. at 25° C.** The improvements in the calomel electrode described in the preceding paper have allowed the standard E.M.F. of the hydrogen-calomel cell at 25° C. to be determined by direct extrapolation of the experimental measurements to zero ionic strength. The standard free energy of formation of mercurous chloride and the activity coefficients of aqueous hydrochloric acid at 25° C. have been re-evaluated. C—9.

Starch Suspensions: The Influence of Some Capillary-Active Substances on— Jens Jensen. *Medd. Dansk. Textilforskn. Inst.*, 1951, No. 54, pp. 125-130. In Danish. The properties of gels or colloidal solutions of starch in water depend to a very great extent on the conditions prevailing during or after their preparation, and, even when these conditions appear to be similar, marked varia-

tions in properties can arise. The present paper deals with the influence of some capillary-active substances on the properties of starch suspensions under various conditions. Temperature/swelling and time/swelling curves of starch (fractionated and unfractionated) in water, and the effect of additions of wetting agents, such as lauryl sulphate and similar substances, are discussed. C—9.

Fractionated Rubber: An Investigation by Physico-Chemical Methods. S. Bywater and P. Johnson. *Trans. Faraday Soc.*, 1951, 47, Part 2, pp. 195-212. An attempt has been made to gather information on the molecular weight and shape of the constituent macromolecules of rubber by examining a series of rubber fractions. Osmotic pressure, viscosity, diffusion, sedimentation, partial specific volumes, and light-scattering properties of the rubber fractions in chloroform and hexane were examined. C—9.

Trypsin Digestion: Kinetics. Dean Fraser and Richard E. Powell. *J. Biol. Chem.*, 1950, 187, No. 2, pp. 803-820. Preliminary data for the self-digestion of trypsin, and more complete data for the digestion of purified casein by crystalline trypsin, are presented and analysed. There are eleven references. C—9.

Acid Aluminium Di-soaps: Probable Existence. Ernst Back and Karl-Erik Almin. *Acta chem. scand.*, 1950, 4, No. 9, pp. 1401-1407. By thermodynamic treatment, phase equilibria between fatty acid solutions and a solid of aluminium soaps are deduced on the basis of possible phase compositions of the solid. Evidence is obtained for the existence of an acid aluminium di-stearate with a composition varying from $AlOHSter_2$ to a compound close to $3Al(OH)Ster_2HSter$, which can be interpreted as a solid solution of di-stearate $AlOHSter_2$ and acid di-stearate $AlOHSter_2HSter$. There are ten references. C—9.

Rate Constants in Radical Polymerisation Reactions. G. M. Burnett. *Quart. Rev. Chem. Soc.*, 1950, 4, No. 3, pp. 292-326. The study of radical reactivity in polymerisation reactions, both in regard to mechanism and to rate constant, is reviewed. The subjects of polymerisation in solution and copolymerisation are also covered at length. There are eighty-nine references. C—9.

Sedimentation Equilibria of Polydisperse Non-Ideal Solutes. IV. Association in Dilute Cellulose Acetate Solutions. M. Wales and D. L. Swanson. *J. Phys. Colloid Chem.*, 1951, 55, No. 2, pp. 203-210. The addition or removal of calcium ions from a cellulose acetate fraction can cause measurable changes in molecular weight and molecular-weight distribution in dilute acetone solution, and the effect is thought to be caused by association between calcium ions and sulphuric acid half-ester groups on the polymer. The presence of small amounts of sulphate in higher-molecular-weight fractions of cellulose derivatives is capable of causing appreciable errors in the molecular-weight/intrinsic-viscosity relationship. There are twenty-four references. C—9.

Sedimentation Equilibria of Polydisperse Non-Ideal Solutes. V. Uses and Limitations of the Equilibrium Ultracentrifuge. M. Wales. *J. Phys. Colloid Chem.*, 1951, 55, No. 2, pp. 282-292. The non-ideality factor, β, related to the interaction constant, μ, was measured for the system polystyrene-butanone, by using an ultracentrifugal method, and the values of β obtained were consistent with those computed from osmotic pressure measurements. Six experiments on synthetic mixtures of separately characterised polystyrene samples gave weight-average molecular weights with a standard deviation of 5 per cent. between expected and obtained results. The possibility of calculating number-average molecular weights from sedimentation equilibrium experiments has been investigated. A differential molecular weight distribution curve obtained by fitting a curve to the molecular weights M_a, M_w, M_z and M_{z+1} is believed to yield at least as good an approximation to the actual curve for a polymer as that obtained from all but the most precise fractionations. There are sixteen references. C—9.

Proteins: Selective Absorption of Optical Antipodes. William Bradley and Gerald C. Easty. *J. Chem. Soc.*, 1951, February, pp. 499-503. Both wool and casein selectively absorb (+)-mandelic acid from an aqueous solution of (±)-mandelic acid at room temperature. (+)-α-Naphthylglycollic acid is selectively absorbed by wool from an aqueous alcoholic solution of the (+)-acid. The significance of these results is discussed. C—9.

Cellulose or Cellulose-Hydrate Fibres: Solution. H. Rauch. *Melliand Textilber.*, 1951, **32**, No. 4, pp. 283-289. In German. On attempting to dissolve cellulosic material it is found that solution is never complete, small particles remaining in a finely dispersed state. The proportion of undissolved material (which cannot be removed by normal high pressure filtering methods), depends upon the source of the cellulose. These particles are a source of trouble in that they tend to block the spinnerettes; they are thought to consist of modified cellulose originating in the epidermis. Photographs of various solution stages of cellulose fibres (cotton) are given, together with some photomicrographs showing the distribution and shape of the particles. C—9.

Proteins in Solution: Some Aspects of Chemical Statics and Dynamics. E. A. Moelwyn-Hughes. *Proc. Roy. Soc.*, 1951, **205**, A, January, pp. 60-68. Equilibrium constants governing certain reversible changes in structurally simple proteins are formulated by the method of partition functions, adopting as a model for the protein molecule a regular cylinder, capable of cleavage (partial or complete), about a plane parallel to the base. The types of equilibria considered are: (1) the complete separation into fragments, (2) the conversion of the rigid cylinder into one in which the two parts are capable of independent rotation about the principal axis, and (3) the isomerism which results when the internal rotator couples firmly in two different positions. By means of the method of imaginary frequencies, expressions are derived for the corresponding velocity constants. There are twenty-two references. C—9.

Change of State: Theory. H. N. V. Temperley. *Sci. Progr.*, 1951, **39**, January, pp. 27-40. Changes of state are classified broadly as those not involving latent heat, and those involving latent heat both (*a*) where latent heat vanishes at one point on the equilibrium curve, and (*b*) where latent heat vanishes along a finite portion of the equilibrium curve; the several theories and models put forward to explain changes of state are examined at length. The gas equation modified by R. H. Fowler to $(P+\frac{a}{v^2})(v-b)=NkT$ (a, b, and k being constants and N being the number of atoms per unit mass) is found to be a satisfactory working model of a condensing gas, and to account for some of the properties of the liquid as well. Various liquid models are described, and the "holes" theory, developed by Fürth, is adjudged to be the best. The new approach of introducing the interactions explicity and following up the statistical mechanical consequences of the model without approximations or guesses has led to the Mayer theory of a condensing gas (1938), the London theory of the transition of liquid helium (1938) and the Onsager theory of the two-dimensional ferromagnet (1944 and 1946). There are fourteen references. C—9.

Electrophoresis Cells: Ease of Assembly. M. Dubuisson, A. Distèche and A. Debot. *Biochim. Biophys. Acta*, 1950, **6**, No. 1, pp. 97-112. In French. The construction and operation of two types of electrophoresis cells which are both robust and inexpensive are described. The shape and capacity of the cells can be adapted to various analytical problems. There are forty-one references and detailed diagrams. (From English summary.) C—9.

Synthetic Fibres: Effect of Light. Arnulf Sippel. *Melliand Textilber.*, 1951, **32**, No. 3, pp. 205-209. After giving a general review of the optical properties of synthetic fibres, the author discusses the effect of both artificial light and daylight on their stability. The decomposition processes, and the agents that accelerate or retard them, are discussed. C—9.

Light Absorption and Photochemistry. E. J. Bowen. *Quart. Rev. Chem. Soc.*, 1950, **4**, No. 3, pp. 236-250. The review covers the subject of light absorption by molecules, and includes sections on photochemistry in relation to textiles and on photosensitised polymerisations. The chemistry of the photochemical action of fading and "tendering" of fabrics is discussed. Water vapour and carbon dioxide react photochemically in short-wave light to give oxygen and formaldehyde, and this reaction may be a possible source of living matter on the earth. There are fifty-nine references. C—9.

Peptide Bonds: Tests for Hydrolysis by Ultraviolet Light. Dorothy J. McLean and Arthur C. Giese. *J. Biol. Chem.*, 1950, **187**, No. 2, pp. 543-545. An increase in the number of acidic groups after extensive irradiation of egg albumin

supports the prediction that peptide bonds which are adjacent to aromatic residues in proteins can be hydrolysed by ultraviolet light. No significant change was found in the number of amino groups or of basic groups. There are eleven references. C—9.

Electronic Whiteness-meter. L. H. Van Der Tweel. *Appl. Sci. Res.*, 1951, **B2**, No. 1, pp. 53-60. A strong and fast-acting photoelectric whiteness-meter, with an accuracy for non-rotating samples of about 0·1 per cent., is described. By varying the cathode resistance of an amplifier tube, the use of precise optical measuring devices is avoided. C—9.

Fluorescent Lamps: Assessment of Colour-Rendering Properties. W. Harrison. *Light and Ltg*, 1951, 44, No. 4, pp. 148-152. A method of assessing the colour-rendering properties of a fluorescent or other lamp is discussed. A simplified form of the eight spectral band data is used in which colour contrast factors are obtained from ratios of spectral band luminance values. Suggestions for the derivation of such ratios are given. C—9.

Vision: Chemical Aspects. R. A. Morton. *Sci. Progr.*, 1951, 39, January, pp. 13-26. A comprehensive account is given of the work done on the chemical substances in the retina which are thought to be responsible for vision. From the original discovery of visual purple or rhodopsin in the rods of the retina, the account follows through the discoveries of Vitamins A_1 and A_2, retinene, and retinene$_2$, to an examination of their spectroscopic properties, their chemical structures, and their relation to each other. There are thirty-one references. C—9.

Fluorescent Lamp Artificial Daylight Units for Colour Matching. G. T. Winch, W. Harrison and H. R. Ruff. *Trans. Illum. Engng. Soc.*, 1951, 16, No. 1, pp. 1-12. The authors examine fluorescent lamp and other artificial daylight units for their reliability in critical colour matching. Types examined include the incandescent lamp and filter combination, the electric discharge lamp, tubular fluorescent discharge lamps combining fluorescent powders in either cold or hot cathode fluorescent lamps, and combinations of fluorescent lamp and incandescent filament. The last mentioned provides a closer approximation to blackbody spectral distribution than fluorescent lamps alone, providing that mixing of the two is adequate. There are eight references. C—9.

Cystine: The High Rotatory Power. Arne Fredga. *Acta chem. scand.*, 1950, 4, No. 8, pp. 1307-1309. From the study of the specific rotations, all of which are high, of some disulphide acids (disulphide-di-α propionic acid, dithian-di-carboxylic acid, disulphide-di-α phenylacetic acid and disulphide-di-β *iso*butyric acid and homocystine), it appears that the high optical activity of cystine may be attributed to the disulphide group and to its position in the molecule. There are seven references. C—9.

Colour and Colour-Rendering Properties of Light Sources: Measurement, Representation and Specification. G. T. Winch and H. R. Ruff. *Trans. Illum. Engng. Soc.*, 1951, 16, No. 1, pp. 13-25. Methods of measuring and specifying colour and colour-rendering properties are described, with particular reference to tubular fluorescent lamps. The colour-rendering properties of these light sources are expressed as percentage luminance in eight spectral bands, and their colour appearance, in C.I.E. chromaticity co-ordinate limits. Typical forms of colour and spectral-band specification are indicated, and a preferred form of block diagram is shown in which the percentage luminance values in the eight spectral bands are plotted on logarithmic ordinates. New and more accurate measuring apparatus is described, to enable lumens, trichromatic co-ordinates and luminance in eight spectral bands to be measured directly on the C.I.E. system in quick succession in the one apparatus. There are twenty-one references. C—9.

Absorption Spectra of Proteins and Amino Acids after Ultraviolet Irradiation. Dorothy J. McLean and Arthur C. Giese. *J. Biol. Chem.*, 1950, 187, No. 2, pp. 537-542. When protein is irradiated by ultraviolet light, qualitative and quantitative changes take place in its extinction coefficients at wavelengths above 2400 A. These effects can be interpreted as due to modifications of the aromatic portions of phenylalanine, tyrosine, and tryptophane since similar changes occur in their analogues lacking alanyl side chains. The alterations are probably the result of oxidations. Twenty-three references are given. C—9.

Capillary and Imbibed Water in Assemblies of Moist Fibres. J. M. Preston, M. V. Nimkar, and S. P. Gundavda. *J. Textile Institute*, 1951, **42**, No. 2, pp. T79-90. An equation is derived which gives the relative mass of water retained by wet fibres after subjection to centrifugal force. This shows that the relative mass of water retained should increase linearly with surface tension, the reciprocal of the centrifugal field, the cosine of the contact angle, the reciprocal of the total height of the capillaries in the direction of the field, and the reciprocal of the square root of the product of density and denier of the fibres. Experiments are described which have been carried out to test the equation. Glass, viscose rayon, and a number of other man-made fibres were used in the investigation. In the case of glass fibres a series of experiments was also made using sintered glass filters in order to eliminate deformation effects which occur with a bundle of fibres, but not with a rigid porous mass. Results are presented and discussed. There are twenty-three references. (See also *J. Textile Institute*, 1950, **41**, A505. C—9.

Electron Microscopes: A Condenser Aperture Device. J. D. Boadway. *J. Appl. Phys.*, 1951, **22**, No. 1, pp. 104-105. A device for holding and permitting alignment of a condenser aperture in an RCA type EMU electron microscrope is described. The device makes for ease of operation of the instrument, and better resolution, and permits excellent electron diffraction patterns to be taken with the specimen in the normal position by removal of the objective and projector pole pieces. Diffraction patterns may be taken of very small areas or of single crystals. There are five references. C—9.

"Cis-Naphthodioxane"—Bi-1,3-Dioxacyclopentyl (2): Crystal Structure. S. Furberg and O. Hassel. *Acta chem. scand.*, 1950, **4**, No. 10, pp. 1584-1596. The crystal structure of "cis-naphthodioxane" has been determined by two-dimensional Fourier syntheses, and it is shown that the formula put forward by Böeseken and others is wrong; the compound is not an isomer of naphthodioxane, but bi-1,3-dioxa*cyclo*pentyl (2). The molecular structure is postulated. There are fourteen references. C—9.

Hydrogen Peroxide: Crystal Structure. S. C. Abrahams, R. L. Collin and W. N. Lipscomb. *Acta Crystall.*, 1951, **4**, Part 1, pp. 15-20. Details of the tetragonal crystals formed by hydrogen peroxide, and of its unit cell of four molecules, are given. The crystal structure has been determined using both double Fourier series and least-squares methods, based on visual intensity measurements of the reflections from three zones. A mechanism for the formation of hydrogen-peroxide/water solid solutions is also suggested. There are twenty-three references. C—9.

Complex Molecules and Ions: Determination of Structures from X-Ray Diffraction by Their Solutions: The Structures of the Groups $PtBr_6^{--}$, $PtCl_6^{--}$, $Nb_6Cl_{12}^{++}$, $Ta_6Br_{12}^{++}$, and $Ta_6Cl_{12}^{++}$. Philip A. Vaughan, J. H. Sturdivant, and Linus Pauling. *J. Amer. Chem. Soc.*, 1950, **72**, No. 12, pp. 5477-5486. X-ray diffraction from solutions has been applied to the determination of the structures of chloro- and bromoplatinic acids ($PtBr_6^{--}$ and $PtCl_6^{--}$) and of some complex lower halides of niobium and tantalum (ethanol solutions of $Nb_6Cl_{14}.7H_2O$, $Ta_6Br_{14}.7H_2O$, and $Ta_6Cl_{14}.7H_2O$). The diffraction photographs have been interpreted by a visual estimation technique. C—9.

Effective Stress and Effective Strain in Relation to Stress Theories of Plasticity. G. N. White, Jr., and D. C. Drucker. *J. Appl. Phys.*, 1950, **21**, No. 10, pp. 1013-1021. The stress-strain relations of a recent theory of plasticity are shown to provide a convenient means of defining and studying effective stress and effective strain. The limitations of such concepts, both theoretical and practical, are indicated, and the calculation of specific plastic work is discussed for both isotropic and anisotropic metals. C—9.

Crystal, Grain, and Particle Size: Effect on X-ray Power Diffracted from Powders. Zigmond W. Wilchinsky. *Acta crystall.*, 1951, **4**, Part 1, pp. 1-9. A theoretical and experimental investigation has been made on diffraction of X-rays from crystalline powders, in which the diffracted power is modified by the powder coarseness and by absorption inhomogeneities in the sample. The magnitude of the diffracted power is related theoretically to particle diameter, linear absorption coefficient, degree of compaction of the powder, crystal size, primary extinction coefficient, crystal-chemical composition, and to the grain

size for polyphased particles. These variables can cause the diffracted power to be significantly different from that for an ideal case. There are sixteen references. C—9.

Electrostatic Problems Associated with Rubber. D. Bulgin. *Trans. Inst. Rubber Ind.*, 1947, **23**, No. 1, pp. 35-40. The author reviews static electrification problems encountered in the manufacture of rubber articles, and in their use, and puts forward suggestions for their elimination or reduction. There are eight references. C—9.

Starch Dispersions: Examination with the Phase Microscope. W. G. Bechtel. *Cereal Chem.*, 1951, **28**, No. 1, pp. 29-39. Corn starch was dispersed, in alkali, and by autoclaving, using methods given in the literature for the estimation of iodine affinity and for separation of starch fractions. Under the phase microscope the dispersed product was found to contain a large number of visible particles. A suggested explanation is that the corn starch granule consists of carbohydrate chains of varying molecular size and complexity. On gelatinisation, those chains of low molecular weight and weak bond strengths dissolve. With more drastic treatment some of the larger and more complex starch grains are set free, leaving the firmly bound regions relatively intact. The particles visible under phase microscope after the usual dispersive treatments probably form part of the amylopectin fraction. There are twenty-two references. C—9.

Frictional Electricity: Hazards in Handling Inflammable Liquids. W. Fordham Cooper. *Trans. Inst. Rubber Ind.*, 1947, **23**, No. 1, pp. 26-28. The article gives a brief account of the causes of electrification when liquids are handled or moved, and safety measures are suggested. C—9.

Electric Sparks: Incendiary Action in Relation to their Physical Properties. F. J. Llewellyn. *Trans. Inst. Rubber Ind.*, 1947, **23**, No. 1, pp. 29-34. Experiments have been made in passing an electric spark through an inflammable vapour-air mixture and through an air-borne cloud of various organic and inorganic dusts, and the minimum energy required for ignition is given for several materials. C—9.

Ultrasonics: Industrial Uses. G. E. Henry. *Gen. Elect. Rev.*, 1951, **54**, No. 3, pp. 32-35. After a brief introduction to the subject of sound energy, the author outlines the present and possible future uses of high-power sound in gases, low-power sound in liquids, and high-power sound in liquids. In the last case, particular attention is paid to the ultrasonic cleaning of metal parts. Finally, some theories relating to the action of ultrasonics are briefly discussed. C—9.

Infra-Red Absorption Spectra of Some Amino-Acids between 2 and 15μ: Investigations. Lennart Larsson. *Acta chem. scand.*, 1950, **4**, No. 1, pp. 25-38. The author describes the apparatus and technique for recording the infra-red absorption spectra of amino-acids in paraffin oil suspension. Further, the absorption bands characteristic of amino-acids between 2·9 and 4·00μ, and those between 5·7 and 7·6μ, are discussed. A method for identifying leucine and valine in the spectrum of leucylvaline, by analysing the bands specific for these two amino-acids between 7·5 and 15·0μ, has been demonstrated. It may be possible to identify the amino-acid components of other peptides in the same way. There are sixteen references. C—9.

Vapour Pressures: Measurement by Means of Matched Thermistors. A. P. Brady, Harriette Huff and J. W. McBain. *J. Phys. Colloid Chem.*, 1951, **55**, No. 2, pp. 304-311. The theory and operation of a modification of the Hills-Baldes vapour pressure apparatus are described. The thermo-couples and galvanometer were replaced by two thermistors incorporated in an alternating current bridge. The new apparatus is found to give greater rapidity and ease of operation, with a sensitivity at least equivalent to the best published thermocouple results. Examples of runs on potassium chloride, potassium sulphate, and the colloidal electrolyte, potassium laurate, are given. There are fourteen references. C—9.

Melting and Crystal Structure. A. R. Ubbelohde. *Quart. Rev. Chem. Soc.*, 1950, **4**, No. 4, pp. 356-381. The author reviews investigations of melting, by study at the melting point of properties such as entropy, volume changes, specific heat, coefficient of expansion, modulus of elasticity, viscosity, scattering of light, electrical resistance, dielectric constant and losses, diamagnetic susceptibility, and X-ray pattern. The results lead to a convenient experimental classification of factors determining the transition from solid to liquid. C—9.

Microwave Techniques for the Measurement of the Dielectric Constant of Fibers and Films of High Polymers. T. M. Shaw and J. J. Windle. *J. Appl. Phys.*, 1950, **21**, No. 10, pp. 956-961. A resonant cavity method is described for the determination of the dielectric constant of polymeric solids in the form of fibres, films and thin cylinders. Methods for investigating electrical anisotropy are outlined. In the case of fibres, for the electric field parallel to the fibre axis, the dielectric constant is determined directly. For the electric field perpendicular to the fibre axis, the problem arises of calculating the dielectric constant of the fibre from that of an air-fibre mixture. Illustrative measurements of the dielectric constant of wool, nylon and Cellophane are presented and briefly discussed. C—9.

Lorentz Factor: Modified. Hans Gunther Heide. *Acta Crystall.*, 1951, 4, Part I, pp. 29-34. In German. The usual expressions for the Lorentz factor of rotation diagrams become infinite for certain angles, but this ceases to be the case if a finite region of reflecting power is taken account of in reciprocal space, corresponding to small finite coherent blocks in the crystal. Curves are calculated showing how the reflected intensity depends on the size of these blocks and on the angle of reflection in the neighbourhood of those angles for which the usual expression is infinite. There are three references. (From the English summary.) C—9.

Moisture Permeability, Diffusion and Sorption in Organic Film-Forming Materials. A. Morris Thomas. *J. Appl. Chem.*, 1951, 1, Part 4, pp. 141-158. The article summarises experimental results obtained in the course of comprehensive investigations of the water-vapour permeability, diffusion and sorption of organic film-forming materials. There are twelve references. C—9.

Collagenous Connective Tissue: A New Fibrous Structure Obtained from Extracts. J. Gross, J. H. Highberger and F. O. Schmitt. *J. Appl. Phys.*, 1951, 22, No. 1, p. 112. A summary is given of a paper presented at the annual meeting of the Electron Microscope Society of America in September, 1950. A new type of fibrous structure—fibrils with an axial structure—has been observed in precipitates from extracts of various types of connective tissue. C—9.

One-Dimensional Crystal. III. A Punched-Card Method for Computing Structure Factors. Gabrielle Donnay and J. D. H. Donnay. *Acta Crystall.*, 1951, 4, Part I, pp. 74-75. Details of a method for computing structure factors are given. It is said to be straightforward and particularly rapid for crystals of low symmetry. There are three references. C—9.

Solids: The Propagation of Plastic Formation. Theodore von Karman and Pol Duwez. *J. Appl. Phys.*, 1950, 21, No. 10, pp. 987-994. The stress wave caused by a longitudinal impact at the end of a cylindrical bar has been analysed in the case where the impact velocity is large enough to produce plastic strain. The theory gives a method for computing the stress distribution along the bar at any instant during impact. It is shown that for a given material, there is a critical impact velocity such that when subjected to a tension impact with a velocity higher than the critical, the material should break near the impacted end with negligible plastic strain. Some of the experimental results are given. C—9.

Small-Angle X-Ray Scattering by Various Cellulose Fibers: A Quantitive Evaluation for the Determination of Crystallite Size. A. N. J. Heyn. *J. Amer. Chem. Soc.*, 1950, 72, No. 12, pp. 5768-5770. Inter-particle interference was found to play an important role in the scattering of X-rays at small angles by various cellulose fibres, both natural and regenerated. Interference is minimised when the fibres are swollen in various ways to increase the distance between the particles, and particle size can then be calculated by the simple approximation formulæ given by Guinier. C—9.

Single Wavelength X-Rays for Powder Diffraction. L. K. Frevel and P. P. North. *J. Appl. Phys.*, 1950, 21, No. 10, pp. 1038-1039. WL_a radiation filtered through a Cu-Zn foil is essentially monochromatic and has the advantage over filtered CuK_a or MoK_a radiation in that the WL_{a1} line is approximately ten times as intense as the WL_{a2} line. The comparatively wide $\Delta\lambda$-spread ($WL_{a2} - WL_{a1}$) results in very sharp powder lines at those Bragg angles where the CuK_a doublet or MoK_a doublet is unresolved. C—9.

Biological Tissues: Structure as Revealed by X-Ray Diffraction Analysis and Electron Microscopy. W. T. Astbury. *Brit. J. Radiol.*, 1949, 22, No. 259,

pp. 355-365. (Reprint.) In his Silvanus Thompson Memorial Lecture, 1948, the author gives an account of the use of X-ray diffraction and electron microscopy in the study of biological tissues and molecular structure. Included among several plates are an electron micrograph of a collagen fibril, and X-ray diagrams of some of the collagen group of fibrous proteins. The corpuscular proteins such as egg albumin, hæmoglobin and edestin are shown by X-ray to unfold their compactly organised polypeptide chain-systems into fibres (such as the β-form of keratin and myosin) when denatured, and it is suggested that in time artificial protein fibres may be made from all sorts of initially corpuscular molecules, such as the seed globulins of groundnuts, soya beans, and the casein of milk. Egg albumin has been transformed into filaments stronger than wool fibres. C—9.

Cellulose Fibres: Structure. Bjarne A. Tönnesen. *Report No. 30 of Papind. Forskningsinst.*, 1950, 12 pages (reprint from *Papper och Trä* **B**, 1950, No. 1). In Norwegian. A survey, based on recent literature, is made of some aspects of the morphological and physical structure of cellulose fibres. Light and electron microscopy studies by various workers are considered, and the concept of the 200-300 Å microfibril suggested by Frey-Wyssling is discussed. Some of the classic results obtained by X-ray crystallographic methods are reviewed. An account is also given of the possibility of using an X-ray diffraction method commonly applied to the structure determination of liquids, to elucidate the molecular structure of the cellulose chain in unoriented samples of regenerated (viscose) cellulose. This method is being used by the author and co-workers in work which has not yet been completed. Some results obtained so far are presented. Several micrographs and diagrams are shown, and a bibliography of 36 references is included. C—9.

Hydroxyproline: Structure. J. Zussman. *Acta Crystall.*, 1951, 4, Part I, pp. 72-73. Data were obtained for crystals of L-hydroxyproline, and zero-layer-line Weissenberg photographs were taken about the *a* and *b* crystallographic axes. The main features of the structure were determined and the molecule was found to have the *trans* configuration. The molecules were shown to be held together by a system of hydrogen bonds. There is one reference. C—9.

Synthetic Polypeptides: Structure. I. X-Ray Investigation. C. H. Bamford, W. E. Hanby and F. Happey. *Proc. Roy. Soc.*, 1951, **205, A**, January, pp. 30-47. Oriented fibres and films of a number of synthetic polypeptides have been prepared, and examined by X-ray diffraction. Polypeptides appear to exist in a folded (α) and an extended (β) configuration, X-ray evidence supporting the view of a ribbon-like molecule. The β-forms of the polypeptides give X-ray diagrams similar to those of β proteins and they are shown to undergo an $\alpha \rightleftarrows \beta$ transformation similar to that encountered in the fibrous α proteins. The medium from which the peptide is regenerated influences the form obtained. Formic acid appears to be unique in producing the β modification of polypeptides which swell or dissolve in this liquid. A mechanism for this transformation is suggested. A number of co-polymers containing glycine have been examined. These appear to exist mainly in the β-form. The similarities in the behaviour of synthetic polypeptides and fibrous proteins are discussed. There are sixteen X-ray photographs and sixteen references. C—9.

Synthetic Polypeptides: Structure. II. Investigation with Polarised Infra-Red Spectroscopy. E. J. Ambrose and A. Elliott. *Proc. Roy. Soc.*, 1951, **205, A**, January, pp. 47-60. Methods of producing oriented films of synthetic polypeptides when prepared from various solvents are described, and the polarised infra-red spectra of a number of these films have been measured. It is shown that the polypeptides can exist in a folded (α) and an extended (β) configuration. In the α-form the N—H and C=O stretching modes of the polypeptide chain show parallel dichroism, while the N—H deformation mode shows perpendicular dichroism. In the β-form these conditions are reversed. The α-form has characteristic frequencies of about 1,660 and 1,560 cm.$^{-1}$, while the β-form has characteristic frequencies of about 1,640 and 1,530 cm.$^{-1}$. When highly dispersed in an inert polymer or liquid solvent it is shown that all the hydrogen bonds of the polypeptide chain can be internally satisfied. It is concluded that in the folded state the chain is maintained in the form of seven-membered rings by *intra*-molecular hydrogen bonds. There are twenty-four references. C—9.

Ultra-Violet Absorption Spectroscopy: Technique with the Burch Reflecting Microscope. R. Barer. *Biochim. Biophys. Acta*, 1950, **6**, No. 1, pp. 123-134. The Burch reflecting microscope, a truly achromatic microscope, has been used to obtain a record of spectral absorption at every wavelength and thus to study spectral fine structure. Experimental details of the methods employed are given; the method has been used on a wide range of materials including cells, fibres and crystals, with both polarised and unpolarised light. The wavelength range so far covered extends from below 240 mμ to 14μ. An account is given of various spectromicrographic techniques and of the advantages possessed by the Burch microscope. There are twenty-seven references. C—9.

Dynamic Plastic Deformation of a Thin Diaphragm: Theory. G. E. Hudson. *J. Appl. Phys.*, 1951, **22**, No. 1, pp. 1-11. The theory presented was developed in an attempt to describe the observed motion and plastic deformation of clamped metal diaphragms used in certain underwater explosion experiments and in certain mechanical gauges. The solutions make it possible to specify the final deformed diaphragm profile, the distribution of thickness after deformation, the swing-time (the total time for deformation to take place), and many other quantities. C—9.

Ultra-Violet Absorption Spectra of some Amino Acids and their Peptides. Claude Fromageot and Georges Schnek. *Biochim. Biophys. Acta*, 1950, **6**, No. 1, pp. 113-122. In French. The investigation of the ultra-violet absorption spectra of tyrosine, tryptophane, phenylalanine, cystine and cysteine, and of some of their peptides, at various *pH* values, has confirmed the spectroscopic results previously obtained. There are twenty references. (From the English summary.) C—9.

Vapour Pressures of Aqueous Solutions of Some Detergents. Harriette Huff, J. W. McBain and A. P. Brady. *J. Phys. Colloid Chem.*, 1951, **55**, No. 2, pp. 311-321. Vapour pressure lowerings determined by the thermistor method are given in terms of the osmotic coefficient for aqueous solutions of nineteen detergents at various concentrations, ten of the substances being measured at both 30° C. and 50° C. The critical concentration, and the slope of a plot of:—osmotic coefficient × molality, *versus* molality above the critical concentration—together allow the calculation of most of the thermodynamic properties of a given detergent up to approximately ten times the critical concentration for micelles. A simple method for approximate activity coefficients and partial molal relative heats is indicated. The partial molal relative heats of the detergents are calculated when possible, and the significance of the values obtained is briefly discussed. There are eleven references. C—9.

Volta Effect as a Cause of Static Electrification. W. R. Harper. *Proc. Roy. Soc.*, 1951, **205**, **A**, January, pp. 83-103. An experimental investigation of the static electrification of metal/metal surfaces shows that the erratic results normally obtained are due to there being more than one cause, and that the complete elimination of rubbing leaves an effect that is amenable to quantitative measurement. This "separation charging" is shown to be related to the contact potential, and to have the characteristics to be expected if the Volta-Helmholz hypothesis of its origin is correct. By paying proper attention to the surface topography at the points of contact and revising the hypothesis to allow for the transfer of electrons by tunnel effect, a precise theory of separation charging is derived. When applied to the experiments, agreement within the limits of experimental error is obtained, without the introduction of disposable constants. C—9.

Plastein: X-Ray Diagram. Martti Kantola and Artturi I. Virtanen. *Acta chem. scand.*, 1950, **4**, No. 8, pp. 1314-1315. X-ray diagrams confirm the picture of plastein obtained from chemical studies as being composed of high-molecular polypeptides which are formed from comparatively low-molecular peptides (for example, 4-6-peptides) by the action of proteolytic enzyme (pepsin). There are two references. C—9.

Collagen: X-Ray and Electron Microscope Studies. Paul Kaesberg and M. M. Shurman. *J. Appl. Phys.*, 1951, **22**, No. 1, p. 112. A summary is given of a paper presented at the annual meeting of the Electron Microscope Society of America in September, 1950. A slit system and Geiger counter arrangement has been used to determine relative intensities for the first 30 orders of the X-ray diffraction pattern of a specimen of beef tendon collagen. C—9.

Sequential Analysis With More Than Two Alternative Hypotheses, and Its Relation to Discriminant Function Analysis. P. Armitage. *J. Roy. Stat. Soc.*, B, 1950, 12, No. 1, pp. 137-144. The author gives an outline of the theory of sequential procedures for deciding between more than two simple hypotheses, together with a discussion of the relationship between such procedures and recent developments in the theory of discriminant functions. The methods are applied to a two-sided test for the value of a binomial probability, and to a two-sided test for comparative trials. C—9.

Enzyme Kinetics and the Rate of Biological Processes. J. Lee Kavanau. *J. Gen. Physiol.*, 1950, 34, No. 2, pp. 193-209. A simple modification of the usual theoretical kinetic formula is found to describe the temperature dependence of a wide variety of biochemical processes with greater accuracy than has hitherto been achieved. Used with the theory of absolute reaction rates, this empirical relation is found to facilitate the determination of thermodynamic functions. In the lower temperature range of enzyme activity a thermodynamic equilibrium appears to exist between catalytically active and inactive forms of the enzyme. It is suggested that at low temperatures the formation of intramolecular hydrogen bridges converts reactive enzyme particles to an inactive condition. The reactive configuration of the enzyme is apparently possessed in only a relatively narrow temperature band, being lost at both high and low temperatures. There are seventeen references. C—9.

Bacteria: Inactivation by Ultra-Violet Radiation. J. Voogd and J. Daams. *Philips Tech. Rev.*, 1950, 12, No. 4, pp. 111-119. A low-pressure mercury-discharge lamp, the TUV lamp, has been developed, whereby micro-organism populations can be controlled and reduced. It is based on the fact that ultra-violet radiation of wavelength 2537 Å has an inactivating effect on bacteria and moulds, the division process being checked so that no cell division occurs. It appears that there is an absorption of the radiation in the nucleoproteids which perform a fundamental function in the multiplication of bacteria, so that irradiation results in a normal dying-off of the organisms without multiplication (bacteriostasis). A dose of 5 mWsec./sq. cm. is usually enough to inactivate 90 per cent. of the bacteria irradiated. Details are given of the construction and operation of the lamp, and the precautions needed for the safeguarding of people working in the vicinity. The article is fully illustrated with photographs and graphs. C—9.

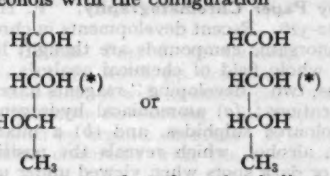
Bacterial Populations: A Simple Spinner for Roll Tubes Used in Estimating. F. H. S. Newbould. *Canad. J. Res.*, 1950, 28, Sec. F, No. 12, pp. 464-467. A simple spinner, run by an electric motor, which utilises cheap, easily obtained screw-capped bottles is found to be a useful substitute for expensive Petri plates in the estimation of bacterial populations by the colony count method. Significant savings in the cost of glassware, in culture media and in incubator space are reported. There are seven references. C—9.

Starch: Enzymic Synthesis and Degradation Part X. The Phosphorylase and Q-Enzyme of Broad Bean. The Q-Enzyme of Wrinkled Pea. P. N. Hobson, W. J. Whelan and Stanley Peat. *J. Chem. Soc.*, 1950, December, pp. 3566-3573. (See also Abstract C.1951/2554.) Q-Enzyme, which converts amylose into amylopectin and which, with phosphorylase and glucose-1 phosphate, is responsible for the synthesis of amylopectin, has been isolated from the broad bean and wrinkled pea. These preparations are found to exert the same function as the Q-enzyme of potato. The phosphorylase of bean has also been isolated and shown to be closely similar to that of potato. It is concluded that the mechanism of starch synthesis in these three plants is the same. Methods of removing α-amylase impurity from phosphorylase and Q-enzyme preparations have been investigated, and a reliable test for α-amylase in the presence of other enzymes is described. The phosphorylase has been almost entirely freed from α-amylase, but a complete separation of this impurity from Q-enzyme has not been achieved. The presence of a "debranching" enzyme, to be described in a later paper, has been established. C—9.

Starch: Enzymic Synthesis and Degradation Part XI. Isophosphorylase. J. M. Bailey and W. J. Whelan. *J. Chem. Soc.*, 1950, December, pp. 3573-3579. (See also preceding abstract.) Isophosphorylase, isolated from the potato, and claimed by Bernfeld and Meutémédian to be responsible for the reversible formation of α-1:6-glycosidic linkages in amylopectin, has been prepared by the pre-

scribed technique, and the key experiments of these authors repeated. Although an apparent agreement was obtained in some of the experimental data, it is concluded that Bernfeld and Meutémédian have misinterpreted their results and that an enzyme with the properties ascribed to "isophosphorylase" does not exist in the potato. C—9.

L-Fuco-4-ketose, a New Sugar Produced by the Action of *Acetobacter Suboxydans* on L-Fucitol. Nelson K. Richtmyer, Laura C. Stewart and C. S. Hudson. *J. Amer. Chem. Soc.*, 1950, **72**, No. 11, pp. 4934-4937. The oxidation of L-fucitol (6-desoxy-L-galactitol) by *Acetobacter suboxydans* has yielded a new sugar, L-fuco-4-ketose. 6-Desoxy-D-altritol and 1,6-di-desoxy dulcitol are also oxidizable by *A. suboxydans*. The evidence indicates that only the ω-desoxy sugar alcohols with the configuration



are oxidizable by this enzyme, and at the point indicated. C—9.

Medical Applications of Paper Partition Chromatography. C. E. Dent. *Adv. Sci.*, 1950, **7**, No. 27, pp. 319-322. Paper chromatography is thought to show unbounded promise in the field of medical diagnosis. The ability of the method to separate with certainty a substance in pure form from a biological fluid containing a very large number of known and unknown constituents makes it of the utmost importance and use. Diseases which show characteristic changes of amino-acid pattern are readily detectable from one drop of urine. Certain diseases of liver and kidney which involve increased amino-acid excretion can be detected even before any acute symptoms occur. (See Abstracts on page A426.) C—9.

Thermophilic Cellulose Fermentation: Carbon Balance and Carbon Dioxide Fixation in. L. Enebo. *Acta chem. scand.*, 1951, **5**, No. 1, pp. 191-194. In the fermentation of cellulose with a pure culture of cellulose thermophiles in two different media, one of which contained tryptone and yeast autolysate and the other inorganic salt solution only, the carbon recovery is found to be very high in spite of the fact that the carbon content of the bacterial cells formed during fermentation was omitted in the calculation. It is assumed that some carbon dioxide has been used in the synthesis of the products of fermentation, chiefly in the formation of succinic acid. There are seven references. C—9.

"Phosphoric Anhydride": Accurate Determination by Means of Quinoline Phosphomolybdate. H. N. Wilson. *Analyst*, 1951, **76**, February, pp. 65-76. A new and very accurate method for the determination of phosphate by the precipitation of quinoline phosphomolybdate is described. The method is volumetric and few substances present in fertilisers (ammonium salts excepted) interfere. Full working details are given. There are fifteen references. C—9.

All-Purpose Extractor. A. W. Hemmings. *Analyst*, 1951, **76**, February, pp. 117-118. Construction details are given for an extractor which has been in use for some years, and which is said to be versatile, easily constructed, compact and robust, and to be able to operate automatically in all circumstances. It can be used as a percolator (Soxhlet extraction), and as a liquid-liquid extractor using either a more or a less dense extracting solvent. There is one reference. C—9.

Sugars and Their Derivatives; Aldonamides: Chromatography. M. L. Wolfrom. R. S. Bower and G. G. Maher. *J. Amer. Chem. Soc.*, 1951, **73**, No. 2, p. 875. Following on their work of separation of sugars, sugar alcohols, glycosides, acetylated sugars and methylated sugars by chromatography, the authors now include the separation of aldonamides by the same method. A number of such amides have been zoned and put into classes. The same adsorbent as before, Silene EF-Celite in admixture, and dioxane as a developer, are used. There are four references. C—9.

Copper: Determination by Dithio-oxamide in Lead and Lead Alloys. P. W. Wright. *J. Soc. Chem. Ind.*, 1950, **69**, Suppl. No. 2, pp. s69-s70. A rapid and accurate method is described for the estimation of small amounts of

copper in lead and lead alloys. Results on several synthetic mixtures are given, and the magnitude of error introduced by the presence of various elements found in lead and lead alloys is indicated. There are four references. C—9.

Anthracene: Dienometric Estimation. The late A. F. Titley, John Frederick Grove and A. J. Allmand. *J. Soc. Chem. Ind.*, 1950, **69**, Suppl. No. 1, pp. S23-S27. A method is described for the estimation of anthracene, involving the Diels-Alder condensation of the hydrocarbon with maleic anhydride, removal of the solvent by steam distillation, and back titration of the unreacted maleic acid. The elimination of a source of error is outlined and the application of the method to the determination of anthracene in technical pastes and oils is discussed. There are ten references. C—9.

Inorganic Analysis by Paper Chromatography. F. H. Pollard. *Adv. Sci.*, 1950, 7, No. 27, pp. 322-326. Recent developments in chromatography as applied to the separation of inorganic compounds are thought likely to have a revolutionary effect on the whole field of chemical analysis. In the separation and identification of cations, two "developing" reagents have been found very useful for a large range of cations: (*a*) ammoniacal hydrogen sulphide solutions for cations which give coloured sulphides, and (*b*) a mixture of kojic acid and 8-hydroxyquinoline in alcohol, which reveals the position of the majority of cations as fluorescent or dark spots when viewed under ultra-violet light. Three generally useful solvents are also given. The *pH* is found to be a very important factor in successful separations. In cation separation *pH* should be about 2. (See second Abstract on p. A425 and following Abstracts.) C—9.

Phenols: Paper Chromatography of Simple —. Ralph L. Hossfeld. *J. Amer. Chem. Soc.*, 1951, 73, No. 2, pp. 852-854. A technique is given for the qualitative separation of many simple phenols. Paper partition chromatography is applied to a mixture of the sodium salts of phenyl azo dyes derived by coupling the phenols, pure or in mixture, with diazotised sulphanilic acid. There are nine references. C—9.

Chromatography: Some Recent Developments. Trevor I. Williams. *Adv. Sci.*, 1950, 7, No. 27, pp. 315-319. The paper is an introduction to two other papers, on the application of chromatography to medicine and to inorganic analysis, given by Dr. Dent and Dr. Pollard, respectively, at the Birmingham Meeting of the British Association. The author gives a most interesting short history of chromatography, and a general account of recent developments in partition chromatography, inorganic chromatography and industrial chromatography. (See second Abstract on p. A425 and preceding Abstracts.) C—9.

Linoleic and Linolenic Acids: Spectrographic Determination. T. P. Hilditch, C. B. Patel and J. P. Riley. *Analyst*, 1951, 76, February, pp. 81-87. The values of the extinction coefficients ($E^{1\%}_{1cm}$) for the ultra-violet absorption bands at 234 mμ and 268 mμ, which are developed when linoleic and linolenic acids are subjected to isomerisation with alkali under the conditions specified by Hildich, Morton and Riley, have been reinvestigated, and found (except in the case of linolenic acid isolated by physical methods) to be in close agreement with the earlier values. There are eleven references. C—9.

Hydrogen Peroxide Vapor: Adsorption Effects in the Decomposition. Milton Tamres and Arthur A. Frost. *J. Amer. Chem. Soc.*, 1950, 72, No. 11, p. 5340. In studying the rate of hydrogen peroxide decomposition with an oil manometer at 45° C. and room temperature, a pressure increase in excess of the 50 per cent. expected for a homogeneous reaction was observed. This is said to be explained by adsorption effects of hydrogen peroxide and water. C—9.

Copper Peroxide: Constitution and the Catalytic Decomposition of Hydrogen Peroxide. Abraham Glasner. *J. Chem. Soc.*, 1951, April, pp. 904-910. On the evidence of photometric and gasometric measurements it is concluded that copper peroxide is formed by the simple addition of an HO_2 radical to cupric hydroxide, and therefore should have the formula CuO, O_2H, aq., instead of CuO, H_2O_2. Copper peroxide is unstable, and its concentration in solutions in which it is prepared is a function of time. The catalytic decomposition of hydrogen peroxide is shown to be proportional to the concentration of copper peroxide present at any moment in the solution. C—9.

Hydrated Calcium Silicates. Part I. Compound Formation at Ordinary Temperatures. H. F. W. Taylor. *J. Chem. Soc.*, 1950, December, pp. 3682-3690.

Hydrous calcium silicates were prepared in three ways and the structure of the resulting phases of the CaO–SiO_2–H_2O system were examined by X-ray. A tentative interpretation of the X-ray data of the phase called calcium silicate hydrate (I) suggests a layer structure reminiscent of the clay minerals. C—9.

Starch: Carbohydrate Primers in Synthesis. J. M. Bailey, W. J. Whelan and S. Peat. *J. Chem. Soc.*, 1950, December, p. 3692. A mixture of dextrins derived from amylose by acid hydrolysis has been separated into pure specimens of glucose, maltose, maltotriose, maltotetrose, maltopentaose and maltohexaose by the method of Whistler and Durso. Maltotriose was found to be the first member of the series which will act as a primer for polysaccharide synthesis. The action of β-amylase on these pure polysaccharides was investigated. Using maltotetraose as a primer the relation between blue value and chain length was studied. C—9.

Organic Compounds: Colour. Part I. A General Colour Rule. Edward B. Knott. *J. Chem. Soc.*, 1951, April, pp. 1024-1028. Förster's colour rule has been modified to cover non-ionic as well as ionic dyes. Tables of thirteen various dye types are given to illustrate its working. An empirical method is given to allow the rule to be applied by organic chemists. It is also shown that this rule can be re-stated in terms consistent with the conclusions of Kuhn from the electron-gas model. C—9.

Fibrinogen: Conversion to Fibrin. III. Sidney Shulman and John D. Ferry. *J. Phys. Colloid Chem.*, 1951, 55, No. 1, pp. 135-144. An inhibitor, hexamethylene glycol, is used to retard the clotting of fibrinogen by thrombin to permit physical measurements, such as sedimentation and viscosity rates, to be made on intermediate products. The results suggest that fibrinogen is converted into an intermediate product which is capable of associating end-to-end to form highly asymmetric aggregates. There are seven references. C—9.

Sucrose: Conversion into Pyridazine Derivatives. Part X. The Properties and Structure of 3-Methyl-6-pyridazone, 1:3-Dimethyl-6-pyridazone, and some Derivatives of Pyridazine. W. G. Overend, Lilian M. Turton and L. F. Wiggins. *J. Chem. Soc.*, 1950, December, pp. 3500-3505. (See also following abstracts.) Proof of the structure of dimethyl-6-pyridazone is provided. The possible existence of tautomeric forms of 3-methyl-6-pyridazone has been investigated by ultra-violet and infra-red absorption spectra measurments. The ultra-violet absorption spectra of numerous pyridazine derivatives are reported. C—9.

Sucrose: Conversion into Pyridazine Derivatives. Part XI. The Ultra-violet Absorption Spectra of Substituted 1-Phenyl-6-pyridazones and Related Substances. W. G. Overend, Lilian M. Turton and L. F. Wiggins. *J. Chem. Soc.*, 1950, December, pp. 3505-3508. (See preceding and following abstracts.) The ultra-violet absorption spectra of a number of derivatives of 3-methyl-1-phenyl-6-pyridazone are reported, and the results discussed. Several new compounds of this class of substance have been prepared. C—9.

Sucrose: Conversion into Pyridazine Derivatives. Part XIII. The Stability of Tetrahydro-6-ketopyridazine and 6-Pyridazone Derivatives towards Acidic Reagents. W. G. Overend and L. F. Wiggins. *J. Chem. Soc.*, 1950, December, pp. 3508-3511. (See also preceding abstracts.) Unlike derivatives of 6-pyridazone, derivatives of tetrahydro-6-ketopyridazine are decomposed by acids. The stabilities of some salts of derivatives of 3-methylpyridazine and 3-methyl-6-pyridazone are discussed. C—9.

Cyanine Dyes Containing the Pyrrocoline Nucleus. Part I. F. G. Holliman and H. A. Schickerling. *J. Chem. Soc.*, 1951, April, pp. 914-920. A series of twenty-six azadimethincyanines containing the pyrrocoline nucleus has been synthesised by the condensation of 2-substituted-3-nitroso- and -3-acetyl-1-nitroso-pyrrocolines with heterocyclic compounds containing reactive methylene groups. Light absorptions of these dyes are given and discussed. C—9.

Vegetable Oils: Effect of Heat. Maharaja M. Bhasin and J. S. Aggarwal. *J. Sci. Industr. Res.*, 1950, 9, No. 12, pp. 298-300. Tabulated results are given for changes in the physical and chemical properties of coconut, castor, groundnut, mustard, safflower and linseed oil, brought about by heating the oils under varying experimental conditions. C—9.

Formaldehyde Condensations with Phenol and Its Homologues. VII. Condensation of 2:4:6-Trimethylphenol with Formaldehyde. S. R. Finn and J. W. G. Musty. *J. Soc. Chem. Ind.*, 1950, **69**, Suppl. No. 1, pp. S3-S7. (See following abstracts.) In the condensation of 2:4:6-trimethylphenol with formaldehyde, evidence is put forward to show that reaction occurs at the meta position relative to the phenolic hydroxyl group, and not at a phenolic hydroxyl or at a methyl side chain. The reaction is found to occur only in the presence of large amounts of strong acid; the corresponding phenolic alcohol can thus be prepared only indirectly. There are ten references. C—9.

Formaldehyde Condensations with Phenol and its Homologues. VIII. Condensation of 3:4-Dimethylphenol with Formaldehyde. S. R. Finn. *J. Soc. Chem. Ind.*, 1950, **69**, Suppl. No. 1, pp. S7-S9. (See preceding and following abstracts.) Ziegler's theory of a trinuclear structure for the compound isolated by Morgan and Megson from the reaction of 3:4-dimethylphenol and formaldehyde in acid solution, and thought to be 2:2′-dihydroxy-4:5:4′:5′-tetramethyldiphenylmethane, is confirmed. A slightly modified method of determining molecular weights cryoscopically in phenol is described. There are six references. C—9.

Formaldehyde Condensation with Phenol and its Homologues. IX. The Effect of *pH* on the Yields of Isomeric Dihydroxydiphenylmethanes. S. R. Finn and J. W. G. Musty. *J. Soc. Chem. Ind.*, 1950, **69**, Suppl. No. 2, pp. S49-S51. (See preceding and following abstracts.) Having previously reported in a patent that, in the presence of zinc oxide catalyst, phenol and formaldehyde react to give resins rich in 2:2′-dihydroxydiphenylmethane and its derivatives, the authors now show that the *pH* of the reaction mixture is an important factor governing both the yield of the isomeric dihydroxydiphenylmethanes and the proportions in which each isomer is formed. There are eight references. C—9.

Formaldehyde Condensations with Phenol and its Homologues. X. The Mixed Melting Points of Mixtures of the Isomeric Dihydroxydiphenylmethanes. S. R. Finn, G. J. Lewis and N. J. L. Megson. *J. Soc. Chem. Ind.*, 1950, **69**, Suppl. No. 2, pp. S50-S53. (See preceding abstracts.) The melting points of the three-component system consisting of the isomeric *o-o′*-, *o-p′*- and *p-p′*-dihydroxydiphenylmethanes has been studied. It is suggested that novolaks from phenol may contain constituents other than those of diphenylmethane type. A new trinuclear compound, 1-hydroxy-2:6-bis-(2-hydroxybenzyl)-benzene, is described. There are eight references. C—9.

Azomethine Dyes: Formation from 4-Anisylidene- and 4,4′-Anisylidene-bis-pyrazolones. George W. Sawdey, Mary K. Ruoff and Paul W. Vittum. *J. Amer. Chem. Soc.*, 1950, **72**, No. 11, pp. 4947-4949. 4-Anisylidene- and 4,4′-anisylidene-bis-pyrazolones undergo oxidative condensation with N,N-disubstituted *p*-phenylenediamines to produce magenta azomethine dyes. These reactions are thought to involve a replacement of the anisylidene group by a *p*-phenylenediamine residue. The mechanism of these coupling reactions and other reactions of the anisylidene pyrazolones are discussed. C—9.

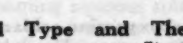
Diazonium Salts: An Improved Method for Hydrolysis. John P. Lambooy. *J. Amer. Chem. Soc.*, 1950, **72**, No. 11, pp. 5327-5328. The author describes an improved method, giving a higher yield and better quality, for the hydrolysis of a diazonium group. The reaction takes place in an actively steam-distilling system which carries the phenol away, thus preventing it from coupling with the undecomposed diazonium compound. The diazonium salt solution is very dilute, to minimize side reactions. C—9.

One-Acid Triglycerides: Microscopic Appearance of Polymorphic Forms. Oscar T. Quimby. *J. Amer. Chem. Soc.*, 1950, **72**, No. 11, pp. 5064-5068. It has been found by data obtained by the polarizing microscope, as well as by X-ray and thermal methods, that fats of the tristearin type crystallize in only three polymorphic forms. Each is said to have its characteristic microscopic appearance, melting point, and X-ray diffraction pattern. C—9.

Arginine and Lysine: New Complex Compounds. Alfred Taurins. *Canad. J. Res.*, 1950, **28**, Sec. B, No. 12, pp. 762-769. The copper salts of the basic amino acids (arginine, histidine, lysine and ornithine) are found to be complex salts with a cation consisting of a copper atom and two amino acid molecules, and an anion consisting of a simple inorganic group. These complex cations

form double complex compounds with anions HgI_3^- or $HgI_4^=$, and these can be used for the quantitative determination of the amino acids. The copper salts of the natural amino acids are classified into four groups. There are twenty-three references. C—9.

Monomers of the Quinoid Type and Their Polymers. M. Szwarc. *J. Polymer Sci.*, 1951, **6**, No. 3, pp. 319-329. It was found that diradicals, stable in the gas phase and with structures analogous to that of the



molecule, were formed by the pyrolysis of each of the following compounds: 2-fluoro-*p*-xylene, 2-chloro-*p*-xylene, 2,5-lutidine, 2,5-dimethylpyrazine, 1,4-dimethylnaphthalene, 5,8-dimethylquinoline. On condensation, the diradicals formed from these compounds polymerise, producing polymeric films which are insoluble in organic solvents. The properties of these "monomers" and of their polymers are described. There are seven references. C—9.

Hydroxylysine: Isolation and Structure. Sune Bergström and Sven Lindstedt. *Acta chem. scand.*, 1951, **5**, No. 1, pp. 157-167. Hydroxylysine has been isolated from gelatine and fish skin, and a number of derivatives have been prepared. The structure has been shown to be α,ε-diamino-δ-hydroxy-*n*-hexanoic acid, and it is thought to belong to the L-series. There are twenty-nine references. C—9.

Glucose and Related Compounds: Oxidation with Oxides of Nitrogen. Ed. F. Degering and Robert A. Berntsen. *J. Amer. Chem. Soc.*, 1951, **73**, No. 2, pp. 848-849. Potassium acid saccharate has been obtained in varying yields (the highest, 50 per cent., in the case of glucose) by the action of nitrogen tetroxide at 35° C. on glucose, gluconic acid, and D-gluconolactone in the presence of potassium carbonate. Oxalic acid was not attacked by nitrogen tetroxide. C—9.

β-Dextrin: Preparation and Properties from Arrowroot Starch. R. Viswanathan. *J. Sci. Industr. Res.*, 1950, **9**, No. 12, pp. 285-289. The preparation of β-dextrin from soluble starch (arrowroot) is described. Four samples were analysed for their phosphorus content, iodine number and copper reducing power. Dextrins were hydrolysed by paddy malt amylase, and the rate was found to be influenced by the phosphorus content and iodine and copper numbers of the dextrin; it is slow when these values are high. The dextrins can be fractionated into two components by cold water extraction. A modified iodometric method is described for determining the copper-reducing power of starches and dextrins. There are twenty-one references. C—9.

Starch. IV. The Molecular Constitution of Amylose Subfractions. A. L. Potter and W. Z. Hassid. *J. Amer. Chem. Soc.*, 1951, **73**, No. 2, pp. 593-595. The molecular weights of potato and corn amylose subfractions were determined by osmotic pressure measurements and by estimation of their chain-lengths with the periodate oxidation end-group method. The results indicate the molecules of the potato subfractions to constitute single chains like the parent amylose, but the corn subfractions appear to contain branched components. A relationship between intrinsic viscosity and molecular weight is given for linear amylose subfractions and is applicable to an amylose from various plant sources. C—9.

Crown-Gall Polysaccharide: Structure. I. E. W. Putman, A. L. Potter, Roland Hodgson and W. Z. Hassid. *J. Amer. Chem. Soc.*, 1950, **72**, No. 11, pp. 5024-5026. A substantial proportion of the glucopyranose residues in the crown-gall polysaccharide are shown by two methods to be united through 1,2-glucosidic linkages. C—9.

Calcium Gluconate: Part I—Production from Dextrose. S. Balasundaram, R. K. Hirani and V. Subrahmanyan. *J. Sci. Industr. Rev.*, 1950, **9**, No. 12, pp. 295-298. An electrolytic process for the production of calcium gluconate from dextrose is described, and a yield of 80 per cent. on the weight of the sugar is reported. There are twenty-five references. C—9.

Cellulose: Synthesis of Mixed Esters Containing Phosphorus. S. Marvel and Bernard R. Bluestein. *J. Polymer Sci.*, 1951, **6**, No. 3, pp. 351-358. Mixed cellulose acetate chloroacetates were prepared from a partially acetylated cellulose with only slight degradation. These cellulose acetate chloroacetates were reacted

with triethyl phosphite in the Arbuzov reaction to yield phosphorus-containing cellulose derivatives which were flame-resistant. A mixed cellulose acetate diethyl phosphate was also prepared and found to be flame resistant. There are seven references. C—9.

Peptides from Anhydro-N-carboxyamino-acids: Synthesis of Simple —. J. Leggett Bailey. *J. Chem. Soc.*, 1950, December, pp. 3461-3466. Various simple peptides of DL- and L-alanine, L-leucine, L-cystine, L-tyrosine, and glycine have been prepared by reaction of the corresponding anhydro-N-carboxyamino-acids with amino-acid and peptide esters in anhydrous solvents at low temperatures. The intermediate carbamates have in some cases been isolated and characterized. The use of 2-thio-oxazolid-5-one for the addition of a glycyl residue to an α-amino-acid ester is described. C—9.

Sugars: Synthesis from Simpler Substances. Part I. The *in vitro* Synthesis of the Pentoses. L. Hough and J. K. N. Jones. *J. Chem. Soc.*, 1951, April, pp. 1122-1126. Aldopentose sugars have been synthesized from formaldehyde, from glycollic aldehyde and glyceraldehyde, and from dihydroxyacetone and glycollic aldehyde. The origin of the pentose sugars in nature is discussed. A method is given for the isolation of DL-arabinose from formose. C—9.

Polypeptide Chain: Two Hydrogen-Bonded Spiral Configurations. Linus Pauling and Robert B. Corey. *J. Amer. Chem. Soc.*, 1950, 27, No. 11 p. 5349. The authors describe the construction of two hydrogen-bonded spiral configurations of the polypeptide chain, with the residues all equivalent, except for variation in the side chain. One spiral is the three-residue spiral with about 3·7 residues per turn, and this is thought to be the configuration present in α-keratin, contracted myosin and other fibrous proteins, and in hæmoglobin and other globular proteins. The second spiral is the five-residue spiral with about 5·1 residues per turn. It is said to be present in supercontracted keratin, which is formed from α-keratin with a shrinkage of about 35 per cent. in the fibre direction. C—9.

Liquid Ammonia: Use in the Fractionation of Wheat Straw Holocellulose. C. T. Bishop and G. A. Adams. *Canad. J. Res.*, 1950, 28, Sec. B, No. 12, pp. 753-761. The authors describe a method of fractionating wheat-straw holocellulose, which involves soaking the holocellulose in liquid ammonia. A complete analysis was done on the hemicellulose fractions precipitated from the extracts by ethanol. D-xylose, L-arabinose, D-glucose, D-galactose and hexuronic acid were found in the hemicellulose fractions in approximate ratios of 40:7:2:1:4. A uronic acid complex, resistant to hydrolysis, was isolated and the components shown to be D-xylose and a monomethoxyl galacturonic acid. There are thirty-seven references. C—9.

Colloidal Electrolytes: The Application of the Mass Law to the Aggregation. Marjorie J. Vold. *J. Colloid Sci.*, 1950, 5, No. 6, pp. 506-513. It has been shown that experimental data for colloidal electrolytes, which are in accord with the predictions of the mass law for a single micellar species, are capable also of an entirely similar description in terms of the mass law for a distribution of micellar species. The results also suggest that in this distribution large micelles are favoured, and that as the concentration of colloidal electrolyte increases, the proportion of bound counter ion tends rapidly toward a constant value which is not very different for different colloidal electrolytes. There are fifteen references. C—9.

Ethanol-Water Mixtures: Chemical and Physical Properties. M. Bobtelsky. *J. Chem. Soc.*, 1950, December, pp. 3615-3617. Ethanol-water mixtures fall into three zones—low, medium and high—with respect to ethanol content, and many physical and chemical processes taking place in the mixed solvents are found to be quite different in the three zones. Possible reasons are advanced for these observations. C—9.

Linseed Oil: Cis-Trans Isomerisation. J. S. Gourlay. *Research*, 4, No. 1, pp. 40-42. The cis-trans isomerisation of linseed oil which occurs when the oil is heated above 200° C. has been followed by watching the development of a characteristic band at 10·35 μ by means of the infra-red spectrometer. The cis-trans isomerisation follows a zero order reaction law, and is accompanied by an increase in viscosity. Polymerisation is a slower reaction and is generally subsequent to cis-trans isomerisation. C—9.

Foaming: Control. I. The Mode of Action of Chemical Anti-Foams. R. E. Prattle. *J. Soc. Chem. Ind.*, 1950, **69**, No. 12, pp. 363-368. (See following Abstract.) A large number of substances were tested for ability to destroy the foam on four different foaming aqueous solutions. The ability or inability of the anti-foams to spread on the foaming liquid was also studied. It is concluded that anti-foams act by displacing from the surface the substance causing the foaming (or, in salt solutions, preventing negative adsorption). They may do this either by dissolving in the foam liquid or by spreading over its surface. The causes of the strong correlation found between foam-killing and spreading are discussed. There are thirty-one references. C—9.

Foaming: Control. II. The Breakdown Mechanisms and Volume of Dynamic Foams. R. E. Pattle. *J. Soc. Chem. Ind.*, 1950, **69**, No. 12, pp. 368-371. (See preceding abstract.) The mechanisms controlling the volume of foam formed by air bubbling continuously through a liquid have been studied. Examples are given in which either (1) coalescence of bubbles within the foam, or (2) bursting of bubbles at the top of the foam, predominates. The effect of alcohols on foaming is noted. The effect of the gas-flow rate on foam volume has been investigated and is found to differ from liquid to liquid. No simple relation between the two is found to exist. There are photographs of foams and four references. C—9.

Cellulose: Crystallinity of Precipitated — P. H. Hermans and A. Weidinger. *J. Polymer Sci.*, 1950, **5**, No. 5, pp. 565-568. Cellulose precipitated from very dilute viscose by acids shows enhanced degree of crystallinity as compared with ordinary viscose rayon. The effect is small when precipitation is carried out at room temperature, and considerable at boiling temperature. The highest figure reached was 53 per cent. as compared with 40 per cent. for rayon. There are seven references. C—9.

Ethyl Cellulose in Solution: Degradation. R. N. Haward. *J. Polymer Sci.*, 1950, **5**, No. 5, pp. 635-636. In support of the equation put forward by Jellinek relating the degree of polymerisation to the time in a chain degradation process, the author describes viscosity results on an acid-catalysed degradation of Hercules "N" type ethyl cellulose dissolved in aqueous ethanol (10 per cent. water, hydrochloric acid). The system is thought to be well fitted for experimental work on degradation processes. There are two references. C—9.

Depolymerisation as a Chain Reaction. Robert Simha, L. A. Wall and P. J. Blatz. *J. Polmer Sci.*, 1950, **5**, No. 5, pp. 615-632. The kinetics of depolymerisation reactions of the chain type are developed by postulating an initiation of radicals, followed by their propagation, transfer and termination. The part each is thought to play in the course of the reaction towards the production of smaller stable species from the original material is described. There are twelve references. C—9.

Molecular Shape: Determination by Osmotic Measurement. A. Isihara. *J. Chem. Phys.*, 1950, **18**, No. 11, pp. 1446-1449. The second coefficient A_2 of osmotic pressure π of polymer solutions is calculated in the case of the rigid ovaloid. A_2 is found to be a function of the molecular shape, and thus the shape of polymers can be determined. C—9.

Citric Acid: Effect upon the Oxidation of Peanut Oil and of the Methyl Esters derived from Peanut Oil. H. W. Lemon, Ruth M. Knapp and A. H. Allman. *Canad. J. Res.*, 1950, **28**, Sec. F, No. 12, pp. 453-463. In studying the anti-oxidation properties of citric acid, and its power to inhibit flavour reversion in edible fats and oils, the authors have used peanut oil and its methyl esters for their experiments. The oxidation of peanut oil is found to be catalysed by the addition of iron in soluble form. The inhibiting action of citric acid on the oxidation is shown experimentally to be due to a deactivation of the iron occurring naturally in the oil, and also to a synergistic effect with other anti-oxidants which are also present. Citric acid is thus shown to have a dual action, metal deactivation and synergism. There are eighteen references. C—9.

Hampered Draining of Solvent: Effects on the Translatory and Rotatory Motion of Statistically Coiled Long-Chain Molecules in Solution. Part I. Translation Resistance; Rate of Diffusion and Sedimentation. Hans Kuhn and Werner Kuhn. *J. Polymer Sci.*, 1950, **5**, No. 5, pp. 519-541. The authors examine at length approximate calculations—both by theoretical consideration of

limiting cases and by experiments with large-scale models—of the forces necessary to maintain relative motions between a statistically coiled molecule, or portion of a molecule, and the surrounding solvent. Theoretical treatments are given for the two limiting cases of the non-draining and the freely draining coil. An attempt is made to determine better values of $\lambda_{trans.}$, the resistance factor, in the expression $F = \eta L \bar{u} \lambda_{trans.}$, where F is the force necessary to propel a chain molecule of hydrodynamic length L with velocity $\bar{u}$ through a fluid of viscosity η. Expressions for the sedimentation and diffusion constants, both of which depend on $\lambda_{trans.}$, are given. The use of large-scale model experiments in conjunction with the principle of hydrodynamic similarity, is shown to represent a rational approach to the solution behaviour of macromolecules. Values are deduced for the length, A_m, and the hydrodynamic thickness, d_h, of the chain element, values of d_h being in rough agreement with the values of d_c, which is the average thickness of the chain deduced from molecular structural data. There are twenty-five references. C—9.

Polyisobutylene: Elastoviscous Properties. II. Relaxation of Stress in Whole Polymers of Different Molecular Weights at Low Temperatures. George M. Brown and Arthur V. Tobolsky. *J. Polymer Sci.*, 1951, **6**, No. 2, pp. 165-176. Following on Part I, which reported a study of the relaxation of stress at constant extension in polyisobutylenes at temperatures from 30° to 100° C., a similar study has been made at lower temperatures, from 0° to −70° C. The elastoviscous properties of this relatively simple linear polymer have been observed, and significant new features have been found in the relaxation behaviour at low temperatures, where the polymer takes on the characteristics of the glassy state. The most significant changes appear at −35° C. and become progressively more pronounced when the temperature is lowered further. Relaxation curves appear to approach independence of molecular weight at low temperatures, and relaxation proceeds by a mechanism distinctly different from that observed at elevated temperatures. There are five references. C—9.

Suspensions of Large Particles: Flocculation. C. E. Hubley, A. A. Robertson and S. G. Mason. *Canad. J. Res.*, 1950, **28**, Sec. B, No. 12, pp. 770-787. A new method of studying flocculation in suspensions of large particles is described. Suspensions of cellulose-fibre were used. The method is based on an assumed mechanism of particle aggregation by shear-induced interparticle collisions, and consists in subjecting the suspension to a reproducible condition of shear motion and analysing electronically the fluctuations in optical transmission coefficient. A flocculation index (σ/N_0), which is a function of both the number and size of the aggregates, is put forward. This index was found to decrease with increasing rate of shear and decreasing fibre length. The effect of concentration and of added substances was investigated. There are sixteen references. C—9.

Cellulose: Heat of Crystallisation. E. Calvet and P. H. Hermans. *J. Polymer Sci.*, 1951, **6**, No., pp. 33-38. From measurements of the heats of dissolution of rayon and cotton linters (samples of cellulose with different percentages of crystallisation), the heat of crystallisation of cellulose has been calculated to be 4,100 cal./mole. The method used, a microcalorimeter cell containing cuprietylenediamine, is described. There are thirty-two references. C—9.

Vinyl Chloride: Heterogeneous System for Polymerisation. J. B. O'Hara and C. F. Prutton. *J. Polymer Sci.*, 1950, **5**, No. 6, pp. 673-686. A process for the polymerisation of vinyl chloride is described, in which gaseous vinyl chloride is bubbled through a solution of potassium persulphate at slightly elevated temperatures and essentially atmospheric pressure. The manner in which the amount of polymer formed varies with time is described. The effects of the variables—monomer rate, catalyst concentration, temperature, and pressure—on the rate of reaction and specific viscosity of the polymer formed, are presented. The locus of the reaction is discussed. There are twelve references. C—9.

High Polymer Solutions. III. The Relation Between Intrinsic Viscosity and Molecular Weight for Polystyrene Fractions in Benzene, Toluene, Chloroform, Ethyl Benzene and Methyl Ethyl Ketone. C. E. H. Bawn, R. F. J. Freeman and A. R. Kamaliddin. *Trans. Faraday Soc.*, 1950, **46**, Part 12, pp. 1107-1112. (See following abstract.) Measurements of the intrinsic viscosity of polystyrene fractions in these five solvents at 25° C. are found to be in accord with the viscosity-molecular weight relationship $[\eta] = KM^{a}$; a attains a limiting value of 0·73 in good solvents. The decrease in a as the solvent becomes poorer is

accompanied by a corresponding increase in K, and these two magnitudes are found to be related. There are eighteen references. C—9.

High Polymer Solutions. Part IV. The Intrinsic Viscosity-Molecular Weight Relationships in Mixed Solvents. C. E. H. Bawn, T. B. Grimley and M. A. Wajid. *Trans. Faraday Soc.*, 1950, **46**, Part 12, pp. 1112-1120. (See preceding abstract.) The relation between the intrinsic viscosity and the molecular weight of polystyrene fractions (mol. wt. 72,000-1,600,000) in toluene-heptane and toluene-methyl alcohol mixed solvents, has been investigated. The relationship $[\eta]=KM^{a}$, was obeyed in all cases and with a constant value of a for any mixture. The value of a is found to decrease in bad solvents, reaching the value $\frac{1}{2}$ at the precipitation point. A single relationship exists between a and K for all pure and mixed solvents examined. The theories of viscosity advanced by Debye and Bucche and by Kirkwood and Riseman are used to evaluate the influence of the solvent on the average dimensions of a polymer molecule. At constant molecular weight the "effective bond strength" b, in the equation $R^2=b^2Z$ (where R^2 is the mean square displacement by the chain ends and Z the degree of polymerisation) is found to decrease in bad solvents, but at the precipitation point, b is found to be independent of the nature of the precipitating mixture. The importance of the so-called "volume effect" of coiling chain molecules, and the difficulties in the way of its detection by viscosity measurements, are briefly discussed. There are ten references. C—9.

Proteins: Homogeneity and Electrophoretic Behaviour. III. A General Method for the Determination of Mobility Distributions. Robert L. Baldwin, Paul M. Laughton and Robert A. Alberty. *J. Phys. Colloid Chem.*, 1951, **55**, No. 1, pp. 111-125. A general method is given for the determination of protein mobility distributions at the average iso-electric point. The method can be used regardless of whether the diffusion coefficients vary among the protein molecules. The mobility distribution is said to be an objective and complete description of the electrophoretic heterogeneity, which is independent of field strength and duration of the experiment. Experimental limitations are discussed, including the effects of *pH* and conductivity variations in the spreading boundary, and of interaction among protein molecules. The method is applied to a number of serum albumin derivatives. There are twenty-nine references. C—9.

Polystyrene: Influence of Molecular Weight on the Properties. II. Fractionation of the Polymer. E. H. Merz and R. W. Raetz. *J. Polymer Sci.*, 1950, **5**, No. 5, pp. 587-590. The article describes a large-scale fractionation of a low conversion polystyrene polymer by stepwise reduction of the temperature of a butanone-methanol solution. The intrinsic viscosity is reported for all thirty-nine fractions, and the light-scattering molecular weight for eight fractions. The distribution curve, having a single broad peak, is also presented. There are eleven references. C—9.

Polycondensations: Intramolecular Reaction in —. I. The Theory of Linear Systems. Homer Jacobson and Walter H. Stockmayer. *J. Chem. Phys.*, 1950, **18**, No. 12, pp. 1600-1606. (See following abstract.) For three types of linear polycondensing systems, equilibrium molecular size distributions, including rings as allowable species, are derived. Average molecular weights and amounts of ring and chain fractions are calculated. The fractions of rings are shown to increase with dilution and with molecular weight. It is shown that beyond a critical dilution it is sometimes possible to obtain 100 per cent. yield of rings by driving the condensation to completion. Detailed calculations are made for two important cases corresponding to condensations of the decamethylene-glycol adipic-acid type: (1) for equimolar amounts of the two monomers, and (2) unequal amounts, with one monomer type completely reacted. There are twenty-one references. C—9.

Polycondensations: Intramolecular Reaction in—. II. Ring-Chain Equilibrium in Polydecamethylene Adipate. Homer Jacobson, Charles O. Beckmann and Walter H. Stockmayer. *J. Chem. Phys.*, 1950, **18**, No. 12, pp.1607-1612. (See preceding abstract.) Decamethylene adipate polymers prepared in the absence of solvent are found to undergo a reversible decrease in solution viscosity when heated for long periods in chlorobenzene. This phenomenon is shown to be due to ester interchange reactions which establish equilibrium between ring and chain

molecules. Quantitative agreement with the equilibrium theory previously published is obtained if the effective length of a chain link is taken as $4{\cdot}5 \pm 0{\cdot}2$A, which is of the order of magnitude to be expected from hindered rotation and steric effects. Measurements of ring-chain equilibrium would thus appear to offer a useful method for characterising the stiffness of relatively short and flexible chains. There are twenty references. C—9.

Macromolecules: Intrinsic Viscosity. Jacob Riseman and Frederick R. Eirich. *J. Polymer Sci.*, 1950, 5, No. 5, pp. 633-634. In a letter the authors attempt to evaluate and compare the formulæ describing the intrinsic viscosity of a linear macromolecule as given by Peterlin, by Wilson, and by Kirkwood and Riseman. They conclude that both the Peterlin and Wilson expressions can be regarded as approximate forms of the Kirkwood-Riseman expression. There four references. C—9.

Soap–Water System: Isobaric and Isothermal Studies. I. W. O. Milligan, Gordon L. Bushey and Arthur L. Draper. *J. Phys. Colloid Chem.*, 1951, 55, No. 1, pp. 44-53. In this study of the physical chemistry of soaps, an attempt has been made to obtain precise dehydration isobars for a limited number of carefully chosen soap samples. Precision dehydration isobars have been obtained for the alpha, beta, delta and omega crystalline phases of sodium palmitate, sodium stearate and calcium palmitate monohydrate. The existence of calcium palmitate monohydrate as a definite chemical individual has been confirmed and its heat of hydration estimated. The isobars demonstrate that α-sodium palmitate and α-sodium stearate exist as hemihydrates. The beta, delta and omega crystalline phases of both sodium palmitate and sodium stearate are not definite hydrates, the water content being desorbed continuously. There are nineteen references. C—9.

Polyethylene: Measurement of Molecular Weight by Menzies-Wright Boiling Point Elevation Method. H. Morawetz. *J. Polymer Sci.*, 1951, 6, No. 1, pp. 117-121. The Menzies-Wright ebullioscopic method was used to evaluate unfractionated polyethylene resin, DYNH (Blend 1004), and the material was found to have a number-average molecular weight in the range 9,000-9,200. The solvent-solute interaction constant μ was calculated and found to be slightly higher than the value predicted by Huggins for solvents with zero heat of mixing. There are seven references. C—9.

Boiling: Mechanism. R. S. Dubey. *J. Sci. Industr. Res. India*, 1950, 9, No. 12, pp. 448-460. Investigations have been made into the mechanism of boiling and the formation of bubbles. There appear to be two stages of boiling, namely, "nucleate" or "bubble" boiling, followed by "film" boiling. Apparatus has been designed, and is described, for the boiling of liquids under different pressures both in a round flask, externally heated, and in a test-tube heated by an electrically heated wire, and for the observation of boiling liquids which are passed by forced circulation over a heated wire lying parallel to the flow. Several factors are found to expedite or hinder the formation of bubbles. Both the findings of others and the results given here are discussed at length. There are thirty-six references. C—9.

Linseed Oil: Method of the Heat Bodying of— P. O. Powers. *J. Polymer Sci.*, 1950, 5, No. 6, pp. 741-743. The author discusses the mechanism of the heat bodying of linseed oil and the assumption of the formation of an intrapolymer put forward by Maschka and Mendl, but no new evidence in support of this theory is given. There are eight references. C—9.

Coagulation: Modern Colloidchemical Concepts of the Phenomenon. Ernst A. Hauser. *J. Phys. Colloid Chem.*, 1951, 55, No. 4, pp. 605-611. A brief historical review of the theories pertaining to coagulation is given. Experimental evidence suggests that a definite line of demarcation can no longer be drawn between electrocratic and lyocratic colloids in regard to their stability. New concepts of solid double layers caused by dipole formation in the surface layer of colloidal matter are offered, and their importance assessed. There are thirteen references. [NOTE—The term "electrocratic" is applied to colloid sols, like those of gold, which owe their stability to electric charges. "Lyocratic" colloids owe their stability to the solvation of the colloidal micelle.] C—9.

Osmotic Balance Modified. C. R. Masson and H. W. Melville. *J. Polymer Sci.*, 1951, 6, No. 1, pp. 1-27. The construction of a modified form of osmotic balance has been described. By suspending a cell from each arm, the instrument has

been made insensitive to temperature changes. In place of weighings, measurements are recorded by altering the buoyancy of one of the cells. By the use of an optical lever in conjunction with a divided photocell, a considerable increase in sensitivity has been obtained, the movements of the balance pointer being magnified about 300 times. A new method of matching the levels of solvent and solution has been described. Difficulties due to evaporation of solvent are discussed. There are four references. C—9.

Nylon: Molecular Weight by End-Group Tritration. Sadhan Basu. *J. Polymer Sci.*, 1950, 5, No. 6, pp. 735-736. Nylon, dissolved in phenol containing a small amount of glycol, was titrated electrometrically with N/10, N/50 and N/100 perchloric acid in 1:1 glycol:isopropyl alcohol. The molecular weight was calculated from the equivalence point, assuming one free primary amino group at the end of each chain. The results—11,110 using N/10 perchloric acid, 11,100 using N/50, and 11,010 using N/100—are compared with a molecular weight of 10,000 obtained from depression of freezing point measurements using 8·5 per cent. solution in phenol. There are two references. C—9.

Polyacrylic and Polymethacrylic Acid: Molecular Weight. A. Katchalsky and H. Eisenberg. *J. Polymer Sci.*, 1951, 6, No. 2, pp. 145-154. The molecular weight of polyacrylic and polymethacrylic acids were determined by two methods: (1) by esterification with diazomethane and determination of the degree of polymerisation by viscosity measurement of the resulting polyester; and (2) by turbidity measurements of dilute aqueous solutions on the addition of hydrochloric acid. Molecular weights of fractions of polymethacrylic acid ranging from 88,000 to 765,000 were determined by both methods and agreement was found to be good. Comparison of the viscometric data in aqueous solutions, with the molecular weights obtained, shows that the molecules are highly coiled in acid solution, that they open by addition of small amounts of alkali, and that they become highly stretched at increasing degrees of neutralization. Excess of electrolyte is said to reduce the intrinsic viscosity of the ionized polyacid to that of a randomly coiled chain. There are seventeen references. C—9.

Osmotic Pressure Measurements: New Dynamic Method —. Howard J. Philipp. *J. Polymer Sci.*, 1951, 6, No. 3, pp. 371-380. The author describes a new dynamic method of measuring osmotic pressures of high polymer solutions. The method greatly reduces the time for each measurement, while accuracy and precision are similar to those of other osmotic techniques. Close temperature control is essential, especially with slow membranes, and a convenient apparatus to control the temperature within 0·001° C. is described. Examples are given for the determination of the "zero-correction" of a membrane with solvent on both sides, and for a complete molecular-weight determination of a commercial cellulose acetate in acetone. There are four references. C—9.

Polyelectrolytes: A New Method for Deriving the Intrinsic Viscosity. D. T. F. Pals and J. J. Hermans. *J. Polymer Sci.*, 1950, 5, No. 6, pp. 733-734. In studying viscosity of solutions of various concentrations of sodium pectinate in aqueous sodium chloride, it was noted that the previously observed maximum viscosity could be avoided if in varying the polymer concentrations the total ionic strength was kept the same. 1 milliequivalent of polyelectrolyte is replaced by 1·5 millimoles of sodium chloride. The relation between specific viscosity and concentration is then linear. There is one reference. C—9.

Polystyrene Solutions: Osmotic Measurements on —. H. P. Frank and H. Mark. *J. Polmer Sci.*, 1951, 6, No. 2, pp. 243-245. In a letter the authors report on osmotic pressure measurements made on three polystyrene fractions. The virial coefficients were calculated and the factors influencing their theoretical evaluation are discussed. There are four references. C—9.

Polystyrene in Mixed Solvents: Osmotic, Viscometric, and Turbidity Studies. Sauti R. Palit, G. Colombo and H. Mark. *J. Polymer Sci.*, 1951, 6, No. 3, pp. 295-304. Polystyrene is found to be completely insoluble in acetone and in methylcyclohexane but it dissolves completely in a mixture of these two substances containing from 13 to 77 per cent. acetone by volume. Viscometric studies show that the intrinsic viscosity, $[\eta]$, is maximum, and Huggins k' value minimum, at about 40:60 acetone-methylcyclohexane mixture. Osmosis studies show that the slope of the osmotic-pressure/concentration (π/c) curve is maximum near this composition. Light-scattering studies show that the scattering is

at a minimum, and the dissymmetry of scattering is at a maximum, near this composition. It appears that the composition showing the maximum solvent power is a true optimum composition and that the dissolved unit is laterally more extended in this optimum composition than at any other composition of the two solvents. There are nine references. C—9.

Aldehydes: Oxidation in the Gaseous Phase. Part IV. The Mechanism of the Inhibition of the Gaseous Phase Oxidation of Acetaldehyde by Nitrogen Peroxide. C. A. McDowell and J. H. Thomas. *Trans. Faraday Soc.*, 1950, **46**, Part 12, pp. 1030-1039. The inhibiting power of nitrogen peroxide on the low-temperature, thermal, gaseous-phase oxidation of acetaldehyde has been studied, and a photoelectric method has been devised to measure the rate of disappearance of nitrogen peroxide during the induction period of the reaction. The results show that nitrogen peroxide reacts with acetaldehyde to form nitric oxide in quantitative yield. The inhibition of the oxidation is thought to be due to the nitric oxide combining with the acetyl radical which normally initiates the oxidation chain. There are twelve references. C—9.

Particle Shape and the Concentration Dependence of Sedimentation and Diffusion. S. Newman and F. Eirich. *J. Colloid Sci.*, 1950, **5**, No. 6, pp. 541-549. A consideration of the motion of a particle in an ultracentrifuge, based on the Langevin equation, shows that the concentration dependence of sedimentation should involve only the concentration dependence of the frictional coefficient. The coefficient K appearing in the expansion of the frictional coefficient, $F=F_0(1+KC+\ldots+)$ has been evaluated from sedimentation data on four fractions of polystyrene in methyl ethyl ketone, toluene, and chloroform. K was found to be proportional to the square root of the molecular weight over the range investigated in the three solvents mentioned, and it was found to be proportional to the average molecular extension in a manner nearly independent of solvent. A parallelism between K and the intrinsic viscosity is discussed. The relationship between the concentration dependence of diffusion and K is briefly treated. The molecular-weight region, for polystyrene in methyl ethyl ketone, in which the concentration dependence of diffusion should change from positive to negative, is predicted. There are nineteen references. C—9.

Viscose: Potentiometric Tritration. III. P. Herrent and G. Jnoff. *J. Polymer Sci.*, 1950, **5**, No. 6, pp. 727-732. In French. By combining various current methods of analysis with the present method of potentiometric titration, it was possible to plot the individual curve of the variation of composition of each of the constituents of viscose as a function of ripening. There are two references. (From the English summary.) C—9.

Silicone Polymers: The Properties and Molecular Weights of Some— E. G. Rochow and T. G. Rochow. *J. Phys. Colloid Chem.*, 1951, **55**, No. 1, pp. 9-16. Remarks of a general nature are made on the preparation, "surface-active" properties and molecular weights of silicone polymers. An attempt was made to calculate the molecular weight of the structural units of a moulded sheet of white silicone rubber by taking photomicrographs (included in the paper) of its fractured surface. There are four references. C—9.

Cellulose Acetate: Rate of Sorption of Organic Vapors by Films. Leo Mandelkern and F. A. Long. *J. Polymer Sci.*, 1951, **6**, No. 4, pp. 457-469. A detailed study has been made of the rate of take-up of vapours of methylene chloride and acetone by thin films of cellulose acetate (37·9 per cent. acetyl) as a function of vapour pressure, film thickness and temperature. It was found that the method of film preparation greatly influenced the sorption. Specially dried films and mercury cast films gave reproducible results. No fundamental difference was found in the rate of sorption for the vapours of methylene chloride and acetone, but for both there is a characteristic pressure above which several anomalies appear. An inversion of slope is observed on the sorption/time curve; it is very marked and appears to be a function of film thickness. The absolute amount of vapour sorbed for thinner films, is greater than for thicker films for an appreciable time interval. Above the pressures where the inversion of a slope occurs, higher temperatures lower the rate for a considerable range of the sorption. There are nine references. C—9.

Cellulose Acetate: Rôle of the Semipermeable Membrane in the Osmotic Molecular-Weight Determination. Howard J. Philipp and Carold F. Bjork. *J. Polymer Sci.*, 1951, **6**, No. 4, pp. 383-396. Different osmotic pressures, and

hence different apparent molecular weights, were observed when solutions of unfractionated and fractionated cellulose acetate in acetone were used with three different types of semipermeable membrane, namely, denitrated collodion, gel-Cellophane and caustic-treated Cellophane. These observed differences are thought to be caused by rapid diffusion of low-molecular-weight material at the beginning of the osmotic measurement, before even the first readings by a dynamic method can be taken. From measurements with a very low-molecular-weight cellulose acetate, it is concluded that, in the case of cellulose acetate in acetone, correct osmotic molecular weights are obtained only with undried gel-Cellophane membranes, the other membranes giving results appreciably too high. There are thirteen references. C—9.

Polydisperse Non-Ideal Solutes: Sedimentation Equilibrium. VI. M. Wales, F. T. Adler and K. E. Van Holde. *J. Phys. Colloid Chem.*, 1951, **55**, No. 1, pp. 145-161. A method for the determination of number-average molecular weights (M_n) with the equilibrium ultracentrifuge has been developed. Extensive graphs and tabulated results are given. The method is applicable to substances of very high molecular weight. Thermodynamic factors for polymer-solvent systems can be calculated from sedimentation equilibrium experiments. A method for the construction of approximate molecular-weight distribution curves from four moments has been developed, and several applications of the method are shown. A molecular-weight distribution curve where $M_n:M_w:M_z::1:2:3$ appears to be rather common among several varieties of unfractionated polymers. There are twenty-one references. C—9.

Direct Cotton Dyes: Selective Diffusion into Ion-Exchange Resins. A New Method for the Purification — R. W. Richardson. *J. Chem. Soc.*, 1951, April, pp. 910-914. Purification of direct cotton dyes by an ion-exchange technique is described. Use is made of the observation that selective diffusion of ionic species into the bulk of the resin structure depends on the molecular dimensions of the ion. It has been shown that by this means the large organic anions of the dye may be effectively separated from those of the much smaller diluent salts. C—9.

γ-Casein: Separation. N. J. Hipp, M. L. Groves, J. H. Custer and T. L. McMeekin. *J. Amer. Chem. Soc.*, 1950, **72**, No. 11, pp. 4928-4931. A method involving alcohol-water fractionation and isoelectric precipitations is described for the separation of α- and β-casein. In composition and properties, γ-casein appears to be similar to the alcohol-soluble casein described by Osborne and Wakeman. C—9.

Starch Fractions: A Simplified Procedure for the Characterisation by Viscosity and Iodine Sorption. Ivan A. Wolff, Laetta J. Gundrum and C. E. Rist. *J. Amer. Chem. Soc.*, **72**, No. 11, pp. 5188-5191. A simplified procedure is presented for determining the intrinsic viscosity and iodine affinity of a starch fraction. Equations are given for estimating accurately the intrinsic viscosity of amylose and amylopectins in 1 N potassium hydroxide solutions from relative viscosities taken at 0·2 per cent. concentration. Iodine affinities of the same alkaline solutions were determined potentiometrically, to measure the proportion of linear material in the starch fractions. C—9.

Crystallised Polymers: Solubility. G. J. Van Amerongen. *J. Polymer Sci.*, 1951, **6**, No. 4, pp. 471-475. The author investigated the behaviour in solution of three crystallised polymers, namely, gutta-percha, rubber hydrochloride, and nylon. In all three cases it was found that, at a low enough temperature, these materials exhibit a separation of phases in the solution, due to the formation of crystallites. The melting point of these crystallites is lower in the better solvents, and also in solutions of a higher dilution. There are six references. C—9.

Elastomeric Microgel: Structure and Thermodynamics. A. I. Medalia. *J. Polymer Sci.*, 1951, **6**, No. 4, pp. 423-431. Microgel consists of branched molecules of colloidal dimensions, formed by gelation occurring within the confines of a latex particle. It is shown that microgel should be (thermodynamically) soluble but, because of the large size of each molecule, it settles out of solution. The proportion of sub-chains which are connected to centres of cross-linkage at one end rather than both ends, is calculated for gelled molecules of various values of the branching coefficient. There are fourteen references. C—9.

Water-in-Oil Emulsions: Studies. I. The Influence of Disperse Phase Concentration on Emulsion Viscosity. P. Sherman. *J. Soc. Chem. Ind.*, 1950, **69**, Suppl. No. 2, pp. S70-S74. (See following abstract.) The effect on the reciprocal mobility of water-in-oil emulsions, of varying the ratio of the two phases, has been investigated using a variable-pressure capillary plastometer. Above certain critical concentrations of disperse phase, inversion to unstable oil-in-water emulsions occurred, accompanied by a great loss of viscosity. Both the value of the maximum reciprocal mobility developed and the point of inversion depended on the concentration of emulsifier employed. Provided the emulsions exhibited Newtonian behaviour, they were found to conform to the modified Einstein and Richardson equations, whereas with the onset of plasticity the modified Hatschek equation was obeyed. There are nineteen references. C—9.

Water-in-Oil Emulsions: Studies. II. The Effect of *pH* on the Reciprocal Mobility. P. Sherman. *J. Soc. Chem. Ind.*, 1950, **69**, Suppl. No. 2, pp. S74-S76. (See preceding abstract.) Water-in-oil emulsions, prepared over a wide range of hydrogen-ion concentration and incorporating non-ionic emulsifying agents, have been investigated. Reciprocal mobility and stability were found to remain unaffected until a certain critical *pH* was reached. Above this value inversion occurred with complete loss of viscosity. With rising *pH*, beyond *pH* of 7·0 the emulsifying agents became increasingly soluble in the aqueous phase, until at the critical limit solubility was virtually complete. There are two references. C—9.

Schardinger Dextrins: Studies. V. Periodate Oxidation. Dexter French and Robert L. McIntire. *J. Amer. Chem. Soc.*, 1950, **72**, No. 11, pp. 5148-5150. (See following abstract.) The oxidation of γ-Schardinger dextrin by sodium periodate has been carried out in an attempt to elucidate its structure. As with the α- and β-dextrins, no formic acid or formaldehyde was produced, and one mole of periodate was consumed per glucose residue. It seems likely that γ-dextrin has a cyclic structure analogous to the α- and β-dextrins. From an analysis of the kinetics of the reaction it would appear that a rapid oxidation follows upon an initially hindered reaction. C—9.

Studies on the Schardinger Dextrins. VI. The Molecular Size and Structure of γ-Dextrin. Dexter French, Doris W. Knapp and J. H. Pazur. *J. Amer. Chem. Soc.*, 1950, **72**, No. 11, pp. 5150-5152. (See preceding abstract.) X-ray crystallographic measurements, acid hydrolysis, paper chromatography and enzyme digestion, together with previous periodate oxidation studies, indicate that the γ-dextrin is the cyclic octasaccharide of the amylose series, cyclo-octa-amylose. C—9.

Starch: Surface Area and its Rôle in Water Sorption. N. N. Hellman and E. H. Melvin. *J. Amer. Chem. Soc.*, 1950, **72**, No. 11, pp. 5186-5188. In an attempt to relate water sorption capacity with surface area of starch granules, the surface area of a range of granule sizes was determined by nitrogen sorption and by a photomicrographic technique. The water sorption was determined gravimetrically. There appears to be no direct relation between the two in the starches investigated. Because of close agreement between the surface areas found by nitrogen sorption and photomicrographic methods, it is concluded that starch granules are relatively non-porous. C—9.

Bovine Plasma Protein Fractions: Ultracentrifugal Study. V. L. Koenig and K. O. Pedersen. *Arch. Biochem.*, 1950, **25**, pp. 97-108 (through *Brit. Abstr.*, 1950, **A II**, September, p. 987). Sedimentation constants at infinite dilution were obtained (by entrapolation) for fractions of bovine plasma protein, as follows: fibrinogen 8·43-8·62 S; γ-globulin 7·28-7·31 S; β-globulin 7·37 S; a mixture of δ-globulins 19·4-19·68 S, 7·31-7·46 S, 5·64-5·67 S; albumin 4·73 S. C—9.

Dyes and Pigments: Measurement of Fading. J. E. J. Neugebauer. *Z. wiss. Phot.*, 1950, **45**, No. 4-6, pp. 84-94 (through *Kodak mthly Abstr. Bull.*, 1950, **36**, No. 11, p. 551). The effects of the exposure of dyes and pigments to light were measured spectrophotometrically and specified colorimetrically. The colorimetric results are represented on a uniform chromaticity-scale diagram. C—9.

Photo-chlorination. Part II. The Photo-chlorination of Methane. Mowbray Ritchie and W. I. H. Winning. *J. Chem. Soc.*, 1950, December, pp. 3583-3589. The photo-reaction between chlorine and methane has been examined under different intensities of absorbed light of wavelengths 3650 and 4060 A, and at various pressures of methane, of chlorine, and of the added gases oxygen,

hydrogen chloride, nitrogen and argon. The inhibiting action of oxygen was found to be extreme. For oxygen-free mixtures, the quantum efficiency tended to approach inverse proportionality to the square root of the absorbed light intensity at low intensities, but at high intensities it became independent of the absorbed light intensity; it was directly proportional to methane pressure at low pressures, but approached a constant maximum at high pressures; it was decreased by the addition of argon, nitrogen, and hydrogen chloride, and increased to a maximum at an intermediate pressure of chlorine. The observations are interpreted by a chain mechanism in which chain ending involves the formation of Cl_3 molecules. C—9.

Dyes: Colorimetric Analysis of Ternary Mixtures. E. Hellmig. *Z. wiss. Phot.*, 1950, 45, No. 4-6, pp. 67-84 (through *Kodak mthly Abstr. Bull.*, 1950, 36, No. 11, p. 551). The chromaticity of a mixture of three dyes is approximately the chromaticity of the binary mixture of the two which remain when the densest neutral combination included in the mixture is removed. The author investigated the errors of this approximation, and the chromaticities obtained when all components of a neutral mixture are increased by the same factor of concentration. C—9.

Colour Triangle. W. de Groot and A. A. Kruithof. *Philips Tech. Rev.*, 1950, 12, No. 5, pp. 137-144. The paper deals with the conception of luminance and colour, the colour space, the colour plane, the mixture law, the number of chromaticities (found to exceed 10,000), the difference between colour stimulus and sensation, and the production of a colour plane by means of coloured lights. A coloured plate, which is a reproduction of a picture in oils representing the chromaticity diagram in ICI co-ordinates, is appended. There are four references. C—9.

Small Refractive Index Differences between the Solution and the Solvent: Effect on Light-Scattering Molecular Weight. Roland Rivest and Marcel Rinfret. *J. Chem. Phys.*, 1950, 18, No. 11, pp. 1513-1514. In estimating molecular weight by light-scattering using Debye's equation, the results are found to be many times too high if the refractive indices of solvent and solute are very close together. Experiments were made using solvents whose refractive indices differed from that of the solute by various amounts. C—9.

Light-Scattering by Concentrated Polymer Solutions. P. Debye and A. M. Bueche. *J. Chem. Phys.*, 1950, 18, No. 11, pp. 1423-1425. The light scattered by benzene solutions of polystyrene up to a volume fraction of polymer of 0·62 has been measured. The results interpreted in the light of recent thermodynamic theories have led to the recognition of a new and rapid method for estimating molecular weights. C—9.

Light-Scattering Investigations of Carefully Filtered Sodium Silicate Solutions. R. V. Nauman and P. Debye. *J. Phys. Colloid Chem.*, 1951, 55, No. 1, pp. 1-9. Measurements of turbidity, *pH* and viscosity have been made on dilute solutions of sodium silicates with $SiO_2:Na_2O$ ratio as high as 3·75:1. Turbidity is found to increase in the higher ratios at high concentration. This may be due to a small amount of aggregation, but there is no evidence for the existence of very large particles. Viscosity changes similarly. There are twelve references. C—9.

Multiple-Beam Interferometry. S. Tolansky. *Endeavour*, 1950, 9, October, pp. 196-202. The author describes the uses of multiple-beam interferometry in measurements of hardness by the indentation method, in studies of the contours of cleavage faces and of cuts made with fine cutting wheels, and in studying the vibrations of electrically excited quartz crystals. There are twenty excellent photographs and twelve references. C—9.

Diffusion Coefficients: On the Use of Rayleigh-Philpot-Cook Interference Fringes for Measurement. Harry Svensson. *Acta chem. scand.*, 1951, 5, No. 1, pp. 72-84. The use in diffusion measurements of the interference refractometer devised by Philpot and Cook has been submitted to experimental tests. Although a differentiation is necessary, it is shown that the conventional height-area method of computing diffusion coefficients can be used successfully. A detailed description is given of a method for the accurate determination of the maximum derivative of the refractive index in the cell. The direct comparison between the fringe distribution and tables of the integral of the error function

has been tested and the results are discussed. The influence of too poor a correction of the cylindrical element of the optical system is discussed in relation to the relative aperture of this lens. Optical systems are proposed in which the cylindrical element is working at a very low relative aperture. In such systems, it is suggested, good results may be achieved with simple cylindrical lenses. There are ten references. C—9.

Long-Chain Molecules: Optical Anisotropy and Shape. I. Degree of Depolarisation in Light-Scattering by Solutions of Chain Molecules. H. A. Stuart and A. Peterlin. *J. Polymer Sci.*, 1950, **5**, No. 5, pp. 543-549. In German. (See following abstract.) The degree of depolarisation in molecular light-scattering experiments, in the case of statistically-coiled linear molecules, is calculated as a function of the degree of polymerisation, and the limits of the validity of the theory are discussed. There are four references. (From the English summary.) C—9.

Long-Chain Molecules: Optical Anisotropy and Shape. II. Artificial Birefringence. H. A. Stuart and A. Peterlin. *J. Polymer Sci.*, 1950, **5**, No. 5, pp. 551-563. In German. (See preceding abstract.) The relations existing between the electric, magnetic, and streaming birefringence of linear molecular solutions are given as functions of the degree of polymerization. Some possibilities are discussed for the determination of the "macro-" and "micro-" form of a high polymeric molecule, and for the identification of branching. It is shown by electric birefringence on vapours, that paraffin chains are loosely coiled molecules. There are thirteen references. (From the English summary.) C—9.

Polymers: Refractometric Determination of Second-Order Transition Temperatures. V. Determination of the Refractive Indices of Elastomers at Temperatures from 25 to −120° C. Richard H. Wiley, G. M. Brauer and A. R. Bennett. *J. Polymer Sci.*, 1950, **5**, No. 5, pp. 609-614. Refractive-index/temperature data down to −120° C. are reported for a series of rubberlike polymers which have second-order transitions at temperatures below −60° C. These data show a change of slope which locates the transition temperature. A method for insulating the standard Abbé refractometer, and refrigerating it with cooled air to facilitate operation down to −120° C., is described. There are nine references. C—9.

Specific Surface Measurement, with Special Reference to Light-Absorption Methods. Alice E. Moore. *J. Soc. Chem. Ind.*, 1950, **69**, Suppl. No. 1, pp. S33-S36. An apparatus is described for the determination of the surface area of fine powders, using the method based on light absorption by the powder in suspension. The suspension is contained in a wedge-shaped cell and the results are compared with those obtained by the hydrometer and Andrews elutriator methods. With wet-ground flint in a ball-mill, experiments indicated a linear relationship between surface area and grinding time, as far as the test was carried (34 hours). C—9.

Whiteness Relations and their Applications. H. J. Selling and L. F. C. Friele. *Appl. Sci. Res.*, 1950, **B 1**, No. 6, pp. 453-476. Twenty undyed or faintly dyed paper samples were graded visually by thirty-four observers. The samples were then graded according to brightness, and lightness, and according to whiteness formulæ evolved by Stephansen and Harrison, Judd, and Selling. A formula was sought which would (*a*) give a grading of the samples which would show a high correlation with the mean visual grading, and (*b*) yield an optimum whiteness value (in accordance with the visual estimate) when increasing amounts of blue dye were added to an original yellowish sample. The Stephansen formula gave the best results for (*a*), and formulæ by Judd and Selling for (*b*). A lightness-chromaticity diagram illustrates a method of evaluating the effectiveness of a blue dye used to increase the whiteness of paper. Seventeen references are given. (See also *J. Textile Institute*, 1951, **42**, A194.) C—9.

Permeability to Water Vapour of Bituminous Emulsion Films: An Apparatus for Measuring. A. Evans and C. Q. Keiller. *J. Soc. Chem. Ind.*, 1950, **69**, Suppl. No. 1, pp. S1-S3. A description is given of an apparatus for measuring the permeability to water vapour of films formed from bituminous emulsions of the clay-stabilized type. As these have a relatively high permeability compared with ordinary bitumen, a fairly simple apparatus is found to be adequate. There is one reference. C—9.

Hardness Tester: Automatic Light-Load Bergsman-Type. P. Grodzinski. *J. Sci. Instrum.*, 1951, **28**, No. 4, pp. 117-121. By means of special equipment, fully automatic control has been applied to the operation of a stronger model of a Bergsman-type light-load hardness tester used in association with a Vickers projection microscope. The reliability of hardness testing is said to be increased by eliminating manual control of the indenting operation and by redesigning the indenter. Photographs and diagrams are included. C—9.

Cycle Recorder. M. B. Smith. *J. Sci. Instrum.*, 1951, **28**, No. 4, pp. 124-125. A device for recording the on and off periods of automatic electrical equipment is described, with a diagram. C—9.

Viscometers: Damping Device. A. O. Mathai. *J. Sci. Instrum.*, 1951, **28**, No. 4, p. 125. The article gives a description, with a diagram, of a simple device, used with success in damping disturbances which generally occur with suspended types of concentric cylinder viscometers. C—9.

Dextran: Degradation by Ultrasonic Waves. M. Stacey. *Research*, 1951, **4**, No. 1, p. 48. This paper is a short study of the degradation of dextran by ultrasonic waves. The end-product was analysed for various groups and found to be free from carboxyl and other acid groups. C—9.

Equi-Inclination Weissenberg Goniometer: Design. A. McL. Mathieson. *J. Sci. Instrum.*, 1951, **28**, No. 4, pp. 112-114. An X-ray goniometer of the equi-inclination Weissenberg type is described, with photographs and drawings. Construction of the main parts from Hiduminium casting results in a unit which is only 19 lb. in weight and which is easily handled. Use of a guide-rail assembly allows considerable reduction in the dimensions of the base. Design of the film-holder as a section of a cylinder facilitates the loading of single films, or packs of four or five. The method of reversal of drive is novel. C—9.

Air-Borne Dusts: Determination of the Mass Concentration: An Apparatus for the Sublimation of Volatile Filter Bases. P. F. Holt. *Bull. Inst. Mining & Metallurgy*, London, 1950, Jan., No. 518, pp. 1-2, 1 Fig. (through *Bull. Hyg.*, 1950, **25**, No. 10, p. 1024). For the determination of the mass concentration of air-borne dust, much use has been made of the naphthalene filter as a sampling device. The naphthalene filter pad is volatilised by the application of gentle heat, and the residual dust is then weighed. In this paper the author describes an apparatus, made of Pyrex glass, for the sublimation of volatile filter bases. The apparatus can be run overnight without attention, so that much working time can be saved. C—9.

Dextrose and Sucrose: Dielectric Constants of Aqueous Solutions. Cyrus G. Malmberg and Arthur A. Maryott. *J. Res. Nat. Bur. Stand.*, 1950, **45**, No. 4, pp. 299-303. The dielectric constants of aqueous solutions of dextrose, and of sucrose prepared from NBS Standard Samples, were determined at 20°, 25°, and 30° C. for concentrations up to 50 and 60 per cent. by weight, respectively. A bridge method was used, and the sources of error involved are considered. The results, relative to a selected value for water, are considered to be accurate to 0·05 per cent. or better, and are expressed in terms of an empirical equation for the purposes of interpolation. There are thirty references. C—9.

Gel Structure: Direct Observation with the Electron Microscope. Robert D. Vold, Henry F. Coffer and Richard F. Baker. *J. Colloid Sci.*, 1950, **5**, No. 6, pp. 586-588. In a letter, a new technique for studying the structure of gels by the electron microscope, without previous subjection to violent mechanical agitation or extraction of the original oil with volatile solvent, is briefly noted. Electron micrographs of soap gels are shown, and there are seven references. C—9.

Dynamic Vibrometer—the Theory and Use of a New Electrical Instrument for Measuring Mechanical Values. J. Dreyfus-Graf. *Schweizer Archiv*, 1949, **15** (11), pp. 338-43 (through *Building Sci. Abstr.*, 1949, **22**, No. 11, p. 333). The dynamic vibrometer is a new electro-mechanical measuring instrument, consisting of a vibration generator, which imposes vibrations of constant amplitude upon the object under test, and a vibration receiver, which indicates by means of a micro-ammeter the amplitude of the vibrations in the object. The amplitude is amplified about 1,000 times. Current consumption from an a.c. supply is about 0·1 W. The machine measures instantaneously and without supports relative values for elasticity, inertia or friction, and can determine, for example, the

elastic constants of a loaded spring; the loosening of a human tooth; the strength of a rivet, a weld, or a jewel setting; the mass or moment of inertia of an object; the coefficient of friction of a dry or lubricated surface; and the viscosity of a liquid or paste. C—9.

Konimeter: Effect of Adhesive Film Thickness on Sampling Efficiency. R. J. Hamilton, T. Wainwright and W. H. Walton. *Brit. J. Industr. Med.*, 1951, **8**, No. 1, pp. 14-21. The South African technique of preparing films on konimeter slides from a solution of petroleum jelly in xylene has been tested, and found to give results of excellent reproducibility and uniformity. In sampling coal dust the shatter and rebound of the particles against the slide is minimized when the films are made of the order of 1μ in thickness to provide a cushioning effect. There are three references. C—9.

Damping Capacity of Materials: Electronic Instrument for Measurement. A. D. N. Smith. *J. Sci. Instrum.*, 1951, **28**, No. 4, pp. 106-109. An instrument has been designed which provides a simple means of measuring the damping capacities of material vibrating at frequencies from about 50 to 10,000 cycles per second. The principle of operation is that the time taken for the amplitude of vibration to fall to half its value during free decay is measured, by means of a circuit which transmits two pulses to a standard electronic timing instrument at the appropriate moments. The apparatus may be used to measure the rate of decay of any vibration, provided that it is exponential and the frequency is in the specified range. C—9.

Wet Biological Tissues: Electron Microscopy by Replica Techniques. Irwin W. Fischbein. *J. Appl. Phys.*, 1950, **21**, No. 12, pp. 1199-1204. The study of wet biological tissues *in situ* using the electron microscope was made possible by modifying existing replica techniques and developing a new wet replication method. Replicas of wet tissues were produced in extremely thin polystyrene films which could be observed directly in the electron microscope, but better results were obtained by preparing silica replicas from the replicated polystyrene films. C—9.

Linear Amorphous Polymers: Flow. R. S. Spencer. *J. Polymer Sci.*, 1950, **5**, No. 5, pp. 591-608. The principal aim of this paper is to emphasize the importance of flow orientation as a determining factor in the behaviour of polymers in shear. Taking deviations from Newton's law to be attributable primarily to flow orientation, a new relationship between rate of shear and shearing stress is derived, and found to agree reasonably well with experimental fact. The flow behaviour of a polymer is shown to be characterized by two quantities, the Newtonian viscosity and the modulus of high elasticity. The influence of temperature, polymer molecular-weight, and plasticizer content on these quantities is illustrated. Such phenomena as ballooning and spiralling of extruded filaments is discussed. There are twenty-four references. C—9.

Elastic Dispersions: Flow Properties. W. J. Dunning and D. Patterson. *Trans. Faraday Soc.*, 1950, **46**, Part 12, pp. 1095-1101. The flow properties of dispersions of latex rubber in Aroclor 4465 (a "liquid" with a viscosity of 10^{10} poises) have been studied. The apparatus used is illustrated diagramatically. The form of the compression/time curves and the order of magnitude of the strain relaxation time are found to agree with the theory of Fröhlich and Sack. There are five references. C—9.

Whirling Tubes: Flow Through — H. Zychlin and J. Anderson Storrow. *J. Soc. Chem. Ind.*, 1950, **69**, No. 12, pp. 379-384. In order to consider the effect, on the energy dissipated in friction, of a force acting normally to the direction of the flow-path of a liquid, a study was made of a liquid constrained to flow in a coiled tube. The experiments are described with graphs and tabulated results. There are thirteen references. C—9.

Electron Microscopy: Focussing. R. S. M. Revell and A. W. Agar. *J. Sci. Instrum.*, 1950, **27**, No. 12, p. 337. The authors, in a letter, discuss problems involved in the correct focussing of the electron microscope. It has been found that a variation of objective current of 10μA. from the value for exact focus is sufficient to throw the image out of focus. Focussing aids are discussed briefly, and it is recommended that a through-focus series of micrographs be taken with the objective current 25μA. each side of the mean current in all work requiring

high resolution. Such a series of micrographs of shadow metal grain are shown to illustrate the differences in the underfocussed, the focussed and the overfocussed micrograph. C—9.

High-Temperature X-Ray Powder Cameras: Furnace for — T. C. Alcock, H. S. Peiser, J. S. Pont and H. T. S. Swallow. *J. Sci. Instrum.*, 1947, 24, No. 11, pp. 297-298. A small radiation furnace is described for use in a high-temperature vacuum X-ray camera of the Owen type. The chief features of this furnace are uniformity of temperature and small surface area, and these features make the furnace suitable for high vacuum work. C—9.

Compression Force: Gauge for Measuring. P. H. Rinkel. *J. Sci. Instrum.*, 1947, 24, No. 11, pp. 298-299. The construction of a simple gauge for measuring compression forces is described. Data are given for the design of gauges to cover any required range of forces. C—9.

Geiger-Counter X-Ray Spectrometer—Influence of Size and Absorption Coefficient of Specimen on Position and Shape of Powder Diffraction Maxima. A. J. C. Wilson. *J. Sci. Instrum.*, 1950, 27, No. 12, pp. 321-325. In powder spectrometers of modern design the position and shape of the diffraction maxima are influenced by "horizontal" divergence, which in turn is related to the absorption and thickness of the specimen to be examined. The centre of gravity of the maximum is found to be shifted towards lower values of θ by

$$\frac{A^2 \sin 2\theta}{6R^2} + \frac{\sin 2\theta}{4\mu R} - \frac{t \cos\theta}{R\{\exp(2\mu t \operatorname{cosec}\theta) - 1\}}$$

radians, where 2A is the illuminated length of the specimen, t is its thickness, R is the spectrometer radius, and μ is the linear absorption coefficient of the specimen. The error in the spacings calculated from high-angle lines is discussed, and the author predicts that Geiger-counter spectrometry should reach the same accuracy as the powder camera in the measurement of spacings. There are six references. C—9.

Collagen: General Nature of the Extension of Structure Transverse to Fibril Axes. Orvil E. A. Bolduan and Richard S. Bear. *J. Polymer Sci.*, 1951, 6, No. 3, pp. 271-284. Experiments on the cylindrical collagen fibril of kangaroo tail tendon show that the fibril scatters X-rays to its small-angle diffraction pattern in a manner indicating that its effective radius of coherent scatter, R_k (measured transverse to the ordered longitudinal axis) is often a function of layer-line index, k. Results obtained in estimating R_k experimentally by three methods suggest that the fibril is actually compounded of thin parallel filaments, which the drying distorts and displaces in statistical fashion to reduce the effective fibrillar cross-sections for coherent scatter. An introductory model for a compound fibril is examined with respect to the types of refinement required to adapt it more closely to the experimental facts. There are eight references. C—9.

Piezoelectric Crystals: Growing. A. C. Walker. *J. Franklin Inst.*, 1950, December, pp. 481-524. Details of the method of growing ammonium dihydrogen phosphate crystals (ADP), ethylenediamine tartrate crystals (EDT), and quartz crystals, for use in microphones, telephone receivers, etc., are given, and are accompanied by numerous photographs and diagrams of the crystals. A new apparatus, called the constant-temperature rotary reciprocating crystallizer, has been devised for growing ADP and EDT crystals. Problems and defects in crystal formation and growth are analysed at length. The Wacken hydrothermal method of growing quartz crystals has been repeated with considerable success. There are sixteen references. C—9.

Leather and Collagen: High-Pressure Apparatus for Compressibility Studies and Its Application to Measurements. Charles E. Weir. *J. Res. Nat. Bur. Stand.*, 1950, 45, No. 6, pp. 468-476. The design and construction of apparatus to measure volume changes of solids (or liquids) between 1,000- and 10,000-atmosphere pressure is described in detail. Calibration of the equipment and its use determining the compression ($-\Delta V/V_0$) of leather are discussed. Tabulated results are given for the compression of three types of commercial leather—chrome, re-tan and vegetable tanned—as well as for two types of collagen—hide collagen and kangaroo-tail tendon. A formula which describes the compression of these leathers is given. There are thirteen references. C—9.

Fibrous Proteins: Infra-Red Spectra and Structure. E. J. Ambrose and A. Elliott. *Proc. Roy. Soc.*, 1951, **206, A**, April, pp. 206-219. The spectra of silk suture, porcupine quill, elephant hair, swan quill, gelatine and rat-tail tendon have been observed with polarized infra-red radiation. The first four materials gave spectra which show that they contain both extended (β) and folded (α) peptide chains. A band at about 4,600 cm.$^{-1}$ is assigned to a C=O combination frequency, whose dichroism indicates the direction of the transition moment for a C=O deformation mode. Gelatine and collagen give similar spectra, and are different from either α or β proteins or polypeptides. A method of folding a peptide chain, based on a suggestion of Huggins, is given which accounts for the known infra-red and X-ray spectra of collagen and gelatine. There are thirty-one references. C—9.

Graphs: Instrument for Measuring Slope. J. F. Waters. *J. Sci. Instrum.*, 1951, **28**, No. 4, p. 116. An instrument for the measurement of the slope of graphs is described, and is said to have many advantages over the usual graphical method. Simple in design, it consists solely of a pair of pivoted arms, one of which carries two cursors. C—9.

Pseudoplastic: Measurement of the Flow Properties with a Concentric Cylinder Viscometer. Carl G. Lindquist and William C. Sierichs. *J. Colloid Sci.*, 1951, **6**, No. 1, pp. 33-41. The authors demonstrate the type of measurements which can be made to approximate closely the true shear-stress/rate-of-shear curve for a pseudoplastic system for which the rate of shear in laminar, steady flow is, at a fixed temperature, a function of the shear stress only. Measurements made on an aqueous methylcellulose system are described. There are four references. C—9.

Micro-Hardness Tester. H. Lloyd and R. Jeffrey. *J. Sci. Instrum.*, 1947, **24**, No. 7, pp. 186-189. An instrument of simple design is described by means of which the hardness of a material at microscopically determined points on its surface can be measured. Details are given of its construction, calibration and use, together with results of some typical tests carried out with it. C—9.

Microphotography Since 1839. G. W. W. Stevens. *Photogr. J.*, **90**, Section B, No. 6, pp. 150-156. A historical review of microphotography is given, and the author discusses the early work of Dancer, Shadbolt and the English School; the French commercial production of curios by Dagron and others; the Paris Pigeon Post; and the later development of document copying and instrument-scale manufacture. The material for an entire pellicle, comprising 16 large pages of newsprint, was legibly copied with a single exposure through one lens. There are thirty-six references. C—9.

Synthetic Fibers: New Observations on the Small-Angle X-Ray Diffraction. L. M. Arnett, E. P. H. Meibohm and A. F. Smith. *J. Polymer Sci.*, 1950, **5**, No. 6, pp. 737-738. In diffracting X-rays, the authors have observed certain nylon and polythene fibres to give small-angle maxima that are discrete interferences not lying on either the meridian or the equator. These results indicate that the units of fibre structure responsible for diffraction effects at small angles are arranged with considerable regularity in two or three dimensions, rather than in one direction only. For polythene fibres, both first and second-order interferences have been observed. There are seven references. C—9.

Cellulose Fibres: Note on Density Determination by the Flotation Method in Carbon Tetrachloride. P. H. Hermans and D. Vermass. *J. Polymer Sci.*, 1950, **5**, No. 6, pp. 734-735. The authors wish to correct a source of error in their previously published method for the determination of the density of cellulose fibres by the flotation method in carbon tetrachloride. The acid reaction which was observed in the fibre pellets after the density determination, and which prevented reproducible results, is found to be due to the presence of phosphorus pentoxide in the bulb from which the carbon tetrachloride is distilled. A method of testing for the volatile phosphorus trioxide impurities in the phosphorus pentoxide, and a method of purifying the phosphorus pentoxide, are given. There are two references. C—9.

Synthetic and Natural Rubbers: Friction on Ice. P. M. Pfalzner. *Canad. J. Res.*, 1950, **28**, Sec. F, No. 12, pp. 468-489. The author measured the dynamic and static friction on ice, the hardness, and the resilience, of natural and synthetic rubber tyre compounds. General relationships were found to exist between

friction and hardness of the rubber, friction and ice temperature, hardness and temperature, hardness and age of the rubber, and resilience and hardness. Extraction of the rubber with ethanol-toluene had a variable effect. There are two references. C—9.

Dislocations: Theory. John Lee Bogdanoff. *J. Appl. Phys.*, 1950, **21**, No. 12. Dislocations in a multiply-connected elastic solid, when discontinuities are permitted across a stationary barrier in either the strain or its first derivatives or both, have been studied, and found to be of a more general type than is encountered in classical theory. A number of these more general dislocations have been obtained for states of plane and anti-plane strain in a hollow right circular cylinder when the surface of discontinuity is a single stationary plane barrier. Some of the dislocations are found to possess the characteristic, that although the strain is continuous across the barrier, the displacement discontinuity is not one which would be possible in a rigid body. Examination of the conditions for the uniqueness of solution of the boundary-value problems of elasticity, reveals that when dislocations of the more general type are admitted, appropriate data should be given at each point on the specified barrier, in addition to the usual information. C—9.

Crystals: Orientation; Use of Geiger Counter X-Ray Spectrometer. J. A. James. *J. Sci. Instrum.*, 1950, **27**, No. 12, p. 326. A Geiger counter X-ray spectrometer is described which enables orientation of single crystals, or large crystals in polycrystalline sheet, to be carried out rapidly without special preparation of the sample. There are two references. C—9.

Cold-Drawn Polymers: Oriented Overgrowth. R. B. Richards. *J. Polymer Sci.*, 1951, **6**, No. 4, pp. 397-402. Oriented overgrowth of paraffin wax crystals, grown from solution, has been observed on the surface of cold-drawn strips of polyethylene and of polyethylene sebecate, but not on oriented gutta-percha, rubber, polyethylene terephthalate, or nylon. The distribution of the angles at which the platelike paraffin crystals lie on polyethylene has been measured; it is found to be narrower than the angular distribution of the crystalline regions in the polymer as a whole, as calculated from the X-ray diffraction pattern. This suggests that the crystallites in the polymer surface are more perfectly oriented than in the interior. There are six references. C—9.

Measurement: Precision Methods Employing Photographic Techniques. E. A. Miskin. *Photogr. J.*, 1950, **90**, Section B, No. 6, pp. 157-164. Methods of precision measurement using stereoscopic pairs of photographs are described. Reference is made to the application of the Porro-Koppe principle of stereoscopic reconstruction as employed in certain plotting machines. The general principles of stereoscopic reconstruction are stated, and the importance of the base-distance ratio and the focal length of the camera lens are discussed in their relationship to accuracy of measurement. The conditions necessary in the inner and outer orientation of the cameras are given, and formulæ to determine the probable error of measurement in the plastic image are stated. Use is made of macrophotography and microphotography for measurements to an accuracy of one micron. The relative affinities of microscope and plotting apparatus are discussed, and a suitable method is given to enable plotting of microscopic objects to be carried out at a convenient scale. There are photographs and diagrams. C—9.

Elastic-Viscous Media: Propagation Phenomena. Robert Sips. *J. Polymer Sci.*, 1951, **6**, No. 3, pp. 285-293. Using results from a former paper, the author gives the equation for the propagation of one-dimensional disturbances in an elastic-viscous medium defined by its relaxation function. The integro-differential equation so obtained is integrated in two important cases: the steady periodic motion, and the propagation of an initially localized disturbance in an initially unstressed medium. There is one reference. (See *J. Textile Institute*, 1950, **41**, A331.) C—9.

Weissenberg X-Ray Photographs: Rapid Mechanical Method for Transforming into a Reciprocal Lattice. V. Vand. *J. Sci. Instrum.*, 1947, **24**, No. 12, pp. 326-328. A simple mechanical method and apparatus for transforming Weissenberg photographs into a reciprocal lattice are described. The general theory given is applicable also to other types of moving-film camera. C—9.

Dust Counts (Light- and Dark-Field): Relation between and Precision of Simultaneous Impinger, Midget-Impinger, Electric-Precipitator, and Filter-Paper Sample Counts. E. C. Brown and H. H. Schrenk. *U.S. Bur. Min. Rep. Invest. 4568*, 1949, December, 35 pages (through *Bull. Hyg.*, 1950, **25**, No. 12, p. 1257). This paper reports a careful study of the reproducibility of dust counts (the dust in liquid suspension) on samples of dust collected by means of the various devices listed in the title, and of the relation between the dust counts yielded by samples obtained simultaneously by two or more of the sampling devices. The precision or reproducibility of counts from the samples got by the various methods was such, that two-thirds of the counts on samples obtained under identical conditions agreed to within 5 per cent., 95 per cent. of the counts agreed to within 10 per cent., and only 1 per cent. differed by more than 15 per cent. The coefficient of variation was about 5 per cent. **C—9.**

Surface-Tension: Rate of Lowering and Its Rôle in Foaming. Emil J. Burcik. *J. Colloid Sci.*, 1950, **5**, No. 5, pp. 421-436. The rate of surface-tension lowering of solutions of sodium laurate, sodium dodecyl sulphate, and sodium oleate were determined by the oscillating jet technique, and the stability of foams, by the single bubble technique. The surface viscosity of sodium laurate was that of pure water and no surface plasticity was observed. The rate of surface-tension lowering of sodium laurate increases with concentration. The rate of lowering for sodium dodecyl sulphate is appreciably greater than that for sodium laurate. The rate for sodium oleate does not increase appreciably in the higher concentration range. Sodium chloride is found to increase the rate of surface-tension lowering of sodium laurate. The conditions for high foam stability are said to be (1) low surface-tension relative to that of the pure solvent, (2) moderate rate of surface-tension lowering, and (3) a high bulk or surface viscosity. There are twenty references. **C—9.**

Accelerometers: Response to Transient Accelerations. Samuel Levy and Wilhelmina D. Kroll. *J. Res. Nat Bur. Stand.*, 1950, **45**, No. 4, pp. 303-309. Curves and tables are given for the response of accelerometers to transient exciting accelerations. Three types of acceleration/time relations are considered, and when plotted, they have square, triangular and half-sine-wave shapes. To obtain an accuracy of better than 5 per cent. of the peak acceleration, in measuring acceleration pulses having the general characteristics of the triangular or sinusoidal pulses, an accelerometer must have a natural period of about one-third the duration of the acceleration pulse, and a damping constant of about 0·4 to 0·7 of the critical value. There are five references. **C—9.**

Thermoplastics: Rheology. II. Recoverable and Non-recoverable Deformations of Polystyrene between 90° and 240° C. as a Function of Molecular Weight. R. Buchdahl, L. E. Nielsen and E. H. Merz. *J. Polymer Sci.*, 1951, **6**, No. 4, pp. 403-422. The rheological properties of polystyrene have been studied between 90 and 240° C., as a function of molecular weight, by three different methods: rotational viscometer, extrusion-type capillary viscometer, and tensile creep measurements. It has been shown that the non-recoverable (viscous) deformation is a function of molecular weight, whereas the recoverable deformations are practically independent of chain length. An explanation of this observation is suggested. The temperature dependence of the recoverable and non-recoverable deformations is shown to be very similar. Experimental evidence shows that the dependence of the viscosity on shear stress (or rate of shear) is not a simple power relationship, but is of the sigmoidal type. It is shown that the creep or compliance function a few degrees below the second-order transition point does not depend on the weight-average or number-average molecular weight. There are nineteen references. **C—9.**

Single Crystals: Setting from Zero Layer Curve Photographs. P. T. Davies. *J. Sci. Instrum.*, 1950, **27**, No. 12, p. 338. A new procedure is described, in a letter, for a rapid setting to be made by X-rays of crystals which have been already set approximately by optical means. It is based on the method of Weisz and Cole, but the setting arcs are placed at 45° to the incident beam, rather than parallel and perpendicular. **C—9.**

Surface Tension and Contact Angle: Simultaneous Determination. T. P. Hoar and D. V. Atterton. *Research*, 1951, **4**, No. 1, p. 42. To obtain

simultaneous determinations of surface tension and contact angle, the authors have constructed *conical* capillaries into which liquid is forced to a predetermined depth. Formulæ for calculation are given. The method has been used for the determination of the surface tension of molten tin and its contact angle with silica. C—9.

Electron Microscopy (Single-Stage) Using Very High Resolution Photographic Emulsions and Fluorescent Screens. C. Kopp and G. Möllenstedt. *Nachr. Akad. Wiss., Göttingen, math.-physikal. Kl.*, 1946, No. 1, pp. 79-82 (through *Kodak mthly Abstr. Bull.*, 1950, 36, No. 11, p. 532). A modified Siemens electron microscope equipped with a single electron lens was used to produce micrographs having a magnification of 300. Use of extremely fine-grained photographic plates permitted subsequent optical enlargement of 100, yielding micrographs with a total magnification of 30,000 and a resolution of about 300 A. The main advantages of the method, compared with conventional two-lens electron microscopy at high magnifications, are (1) the area covered by a single micrograph is greatly increased; and (2) the electron density at the photographic plate is great increased, permitting exposures at very low electron-beam intensities, and thus minimizing damage to the specimen. C—9.

Crystals: Slip, Twinning, Cohesion, Growth and Boundaries. H. Wilman. *Proc. Phys. Soc.*, A, 1951, 64, Part 4, pp. 329-350. The nature and stability of intercrystalline boundaries are discussed, and conclusions as to preferred relative orientations are illustrated by ball-bearing and bubble-raft models. Electron-diffraction evidence from crystals of layer-lattice, ionic, metallic, and van der Waals (organic molecular) types, is presented. The seven types of electron-diffraction pattern oserved from such groupings, and the nature of the specimen preparation, suggest that the origin of these groupings is a mechanical deformation of the crystals during or after growth, by a process of "rotational slip". Such slip is demonstrated macroscopically as a deformation process in potassium ferrocyanide trihydrate and gypsum, the slip being produced on the planes parallel to the cleavage of a high degree of perfection. The relation between rotational slip and the known types of translational slip, and dislocation theory, is indicated, with special references to the "deformation bands" of Barrett. A valuable new insight is also provided into many observations on crystal growth and properties —especially the nature, determining conditions, stability and disorientation of crystals growing epitaxially on single crystal substrates—and into the nature of the deformation caused by unidirectional abrasion of crystals. C—9.

Emulsions and Suspensions: Some Aspects of Rheology and Stability. E. W. J. Mardles and A. de Waele. *J. Colloid Sci.*, 1951, 6, No. 1, pp. 42-56. The rheological behaviour of emulsions and suspensions is considered in relation to the properties of surface films adsorbed on the dispersed particles. With change of composition in mixed liquids or with small additions of high-molecular-weight substances, important variations in thixotropy, etc. of a dispersion are recorded which are due to changes in the character of the interfacial surface film. Friction increases between the particles result in larger sedimentation volumes and higher specific viscosity. It is concluded that future progress in this field depends on the results of studies on the properties of thin films of liquid adsorbed on surfaces, including friction measurements at low pressures. C—9.

Redundant Systems: Notes on Analysis by Means of the Conception of Conservation of Energy. T. M. Charlton. *J. Franklin Inst.*, 1950, December, pp. 543-551. The principles of the analysis of conservative redundant systems capable of deformation are considered. To enable a unique solution to be obtained in a particular case, reference must be made both to the conditions for equilibrium and geometrical compatibility. The setting up of one or other of these conditions in a general case, using the concept of energy, is discussed with reference to the law of conservation of energy. The use of "complementary energy" for the fulfilment of the conditions for geometrical compatability is demonstrated. The direct application of the conditions of equilibrium and geometrical compatibility is considered in an appendix. There are ten references. C—9.

Dextran: Breakdown Product formed by Ultrasonic Vibration. A. R. Lockwood, A. E. James and F. G. Pautard. *Research*, 1951, 4, No. 1, pp. 46-48. A study has been made of the fragmentation of the dextran macromolecule by ultrasonic vibration from a high powered ultrasonic generator. The

course of depolymerisation was followed by finding the mean relative viscosity. In the ultrasonic degradation, the trend appears to be towards a preferential cleavage of components of higher molecular weight before fragments of lower molecular weight are affected. C—9.

Skin Thermometers: Study of Thermocouples as— Alice M. Stoll and J. D. Hardy. *J. Applied Physiol.*, 1950, **2**, No. 10, pp. 531-43, 6 Figs. (through *Bull. Hyg.*, 1950, **25**, No. 12, p. 1275). In this investigation it was found that the 28-gauge thermocouple, with the junction on the skin bare, gave value within $\pm 0{\cdot}6°$ C. of the radiometer readings under all conditions; the same couple applied to the skin with adhesive tape over the junction gave deviations twice as great as those found with the bare junction; and the 40-gauge thermocouple with the junction bare was unsatisfactory because of its fragility and the difficulty of making good thermal contact. The general conclusion is that the 28-gauge bare wire thermocouple is suitable for the measurement of mean skin temperature of a quiet subject when an average error of $0{\cdot}4°$ C. can be tolerated. C—9.

Wood: Treatment with Ultrasonic Waves. Nils Gralén and Stig Berg. *J. Polymer Sci.*, 1951, **6**, No. 4, pp. 503-507. The treatment of wood with ultrasonic waves causes a disintegrating of the biostructure of the wood and splits the bonds between lignin and cellulose or other carbohydrates. It is possible that the bonds of the cellulose molecule are also split. After treatment with ultrasound, about 50 per cent. of the wood can be dissolved in cuprammonium. The dissolved material (carbohydrates) consists of two main components with different sedimentation constants. The components are thought to correspond to the cellulose and hemicellulose of the wood. There are twelve references. C—9.

Crystal Structure: Use of Polarised Infra-Red Radiation in Study of — E. J. Ambrose, A. Elliott and R. B. Temple. *Proc. Roy. Soc.*, 1951, **206**, **A**, April, pp. 192-206. The relation between infra-red dichroism of a band produced by co-valent linkages in a crystal, and the direction of the changing dipole moment, is treated quantitatively. Observations of dichroism have been made in a crystalline layer of adipic acid, and in a single crystal of diketopiperazine. The results are found to agree with the crystal structures of the materials as derived from X-ray spectra, when the usual assumptions as to valency angles are made in calculating NH, CH and OH bond directions. The stretching-mode frequencies of NH in diketopiperazine are shown to consist of at least six peaks, all showing exactly the same dichroism. The breadth of the OH band in adipic acid might be explained as being due to rotation of the OH group around the single-bond CO link. There are seventeen references. C—9.

Vulcanized Natural Rubber: Volume Changes in Stretching. Geoffrey Gee, Jan Stern and L. R. G. Treloar. *Trans. Faraday Soc.*, 1950, **46**, Part 12, pp. 1101-1106. The authors present measurements of the volume changes accompanying small (not greater than 100 per cent.) elongations of vulcanized natural rubber completely free from undissolved particles. The small expansions observed are found to agree with those calculated from the known compressibility of the rubber and the hydrostatic component of the stretching force. This volume change mechanism is said to apply generally to any isotropic body, and does not contribute significantly (in rubber) to the tensile stress. There are thirteen references. C—9.

Sintered-Glass Plates, Silicone-Treated: Water-Repellency. M. G. Barrington, D. E. Fleet and R. R. McLoughlin. *Canad. J. Res.*, 1950, **28**, Sec. F, No. 12, pp. 461-463. The hydrostatic pressures that silicone-coated sintered-glass plates will withstand before permitting the passage of water are recorded, and a rough constancy in the product of rupturing pressure and porosity is indicated. It is suggested that these plates are suitable as check-valves to pass gases but not water. There is one reference. C—9.

Wool: Chemical Modification: Treatment with Formaldehyde Solutions. A. E. Brown, L. R. Hornstein and M. Harris. *Text. Res. J.*, 1951, **21**, 222-227. The reaction of formaldehyde with wool was studied in order to determine optimal conditions for the production of wool that is more stable to alkali, as measured by the alkali-solubility test. Extremely mild treatments with dilute formaldehyde solutions confer an appreciable degree of alkali-resistance to the wool, presumably by the formation of cross-links, and optimal alkali-resistance was obtained by treatment with $0{\cdot}5$ per cent. formaldehyde solutions at *pH* 6-8 for

six hours at 50° C. Under these conditions, cystine linkages are not involved to any appreciable extent, and the acid-combining capacity of the wool is changed only slightly. Although loss of sulphur from formaldehyde-treated wool occurs readily on treatment with hot alkaline solutions, the rate of loss of both sulphur and weight is less than in the case of untreated wool. The chemical evidence cited is in agreement with the view that additional cross-linkages are introduced in the wool molecule as a result of treatment with formaldehyde solutions. The lability of these new cross-linkages on exposure to acidic or hydrolytic conditions is noted, and this behaviour is compared with that of wool modified by other chemical reactions. W—9.

Wool: Modification by the Application of Linear Synthetic Polyamides. (I) *N*-Methoxymethyl Polyamides. D. L. C. Jackson and M. Lipson. *Text. Res. J.*, 1951, **21**, 156-163. The effect of surface deposits of nylon and *N*-substituted nylons on the abrasion resistance and felting shrinkage of wool has been determined. *N*-Methoxymethyl nylons are much more effective than nylon itself, when applied from solution, in increasing the abrasion resistance of wool fabric, but not in decreasing the felting shrinkage of the fabric. If the *N*-methoxymethyl nylon is first applied to the wool fabric from alcoholic solution and then hydrolysed *in situ* by approximately 2*N*-hydrochloric acid, the polymer is found to confer non-felting properties on the wool. A deposit of approximately 3 per cent. by weight of polymer has been found to eliminate entirely the felting shrinkage of wool fabric under the conditions of test. The optimum degree of substitution of the nylon for the production of non-feltability is between 5 per cent. and 6 per cent. combined formaldehyde, which corresponds to between 20 per cent. and 24 per cent. —NH groups substituted. The effectiveness of these polymers in increasing resistance to abrasion and decreasing felting shrinkage is explained on the basis of their adhesion to, and covering power on, the wool fibre. W—9.

Polymers: Synthesis in Reduced Wool. M. Lipson and R. J. Hope. *Australian J. Sci. Res.*, 1950, **A**, **3**, 324-329. Cysteine, in the presence of certain oxidising agents, can act as a powerful catalyst for polymerising ethylenic monomers. This aids in explaining the reactions which occur when wool is reduced with sodium bisulphite and then treated with a monomer. Polymerisation within the fibre is probably initiated by free radicals produced from reduced cystine by the action of sulphoxides or sulphones present in the wool as a result of atmospheric oxidation. Fraction $(A+B)$ of the cystine appears to be involved as pre-treatment with alkali, which converts this fraction to lanthionine, prevents polymerisation from taking place. Little or no polymer can be formed in wool from the base of a staple, whereas polymer can be synthesised quite readily in the tip, where oxidation products are more likely to be present. If, however, wool from the base is pre-treated with a mild oxidising agent, polymerisation will then occur as readily as in the tip. The polymer is apparently chemically bound to the wool through thio-ether linkages. W—9.

Fatty Alcohols from Wool Wax Unsaponifiables by Urea-complex Formation. E. von Rudloff. *Chem. & Ind.*, 1951, No. 17, 338. A method of separating the fatty alcohols is described that depends on the complex formation which occurs between urea and constituents of commercial wool wax unsaponifiables. The method of isolation is described. Analytical data are given for a recrystallised high-melting fraction of monohydric material, free from dihydric alcohols. W—9.

Colour Differences on Wool Flannel: Accuracy of Visual Judgments. H. R. Davidson. *Amer. Dyest. Rep.*, 1951, **40**, 247-254. Quantitative data are given on the consistency and accuracy of colourists in describing small colour differences, and also on the difference between highly and less experienced colourists. There is very little agreement between different observers as to what constitutes an "acceptable match". W—9.

Reaction of Oxidising Agents with Wool. (4) The Reactivity of Tyrosine. P. Alexander and D. Gough. *Biochem. J.*, 1951, **48**, 504-511. A study has been made of the reaction of different oxidising agents with the tyrosine in wool, horn, silk, solubilised keratin, tyrosylglycine, glycyltyrosine, and glycyltyrosyl-

glycine. Chlorine and hypochlorous acid oxidise all the tyrosine in wool, whereas acid permanganate and alkaline hypochlorite oxidise only 30 per cent. of the tyrosine present. The tyrosine in wool may therefore be divided into two fractions, one of which is oxidised by the latter two reagents and the other not. Peracetic acid does not oxidise the tyrosine in any of the materials studied. There is no evidence for tyrosine fractions of different reactivity in silk or the high-molecular weight α-keratose rendered soluble by oxidation. More than twice as much chlorine is required at *pH* 10 than at *pH* 2 to oxidise the same amount of tyrosine in silk and α-keratose, whereas chlorine and hypochlorite are equally effective in oxidising the tyrosine in simple peptides and low-molecular weight fractions of wool. The difference in reactivity of the two tyrosine fractions in wool is explained in terms of the structure for wool proposed by Alexander.
W—9.

Reaction of Oxidising Agents with Wool. (3) The Influence of the Morphology on the Rate of Reaction. P. Alexander, D. Gough and R. F. Hudson. *Biochem. J.*, 1951, **48**, 20-27. The kinetics of the reaction of wool with aqueous chlorine solution of *pH* less than 8 are explained by the uniform diffusion of chlorine or hypochlorous acid through the swollen fibres. This process is not rate-determining in solutions of *pH* greater than 8. The form of the kinetic curve, the effect of various pre-treatments on the rate, and the temperature coefficient of the process, all show that the alkaline reaction is not controlled by the actual oxidation process, but can be interpreted in terms of diffusion across a surface barrier. The presence of the epicuticle does not affect the rate of diffusion of the hypochlorite ion. In alkaline solutions the negatively charged subcuticle retards the penetration of anions, so that diffusion through this membrane determines the over-all rate of reaction. W—9.

Formaldehyde: Formation of a Cross-link between Lysine and Tyrosine Residues in Wool. P. Alexander, D. Carter and K. G. Johnson. *Biochem. J.*, 1951, **48**, 435-441. Wool combines irreversibly with formaldehyde at low concentrations in neutral solution at 60°. It is suggested that new cross-links are formed which increase the resistance to alkaline degradation, prevent supercontraction and increase the tensile strength of the fibres. These effects are reversed by hot solutions of *pH* less than 3 without, however, liberating the formaldehyde. The links are stable to alkali. It seems probable that formaldehyde forms cross-links between phenyl groups from tyrosine and ε-amino groups from lysine. These are broken by acid without liberation of the formaldehyde, which remains in the wool as methylol tyrosine. W—9.

Wool: Plasticity. O. Ripa and J. B. Speakman. *Text. Res. J.*, 1951, **21**, 215-221. When wool fibres are allowed to extend under constant load in distilled water at ordinary temperatures, there is an exponential approach of the extension, E, to a limiting extension, $E_{limiting}$. The slopes, k, of the lines obtained by plotting $\log (E_{limiting} - E)$ against t indicate the rate of unfolding of the molecules in the crystalline phase. Under the same load the value of k was found to be decidedly variable, even with fibres taken from a single lock of Lincoln wool; and determinations of sulphur content, after the fibres had been classified into three groups according to their rates of extension, showed that k varies inversely with the sulphur content. Different values of k were obtained for the root and middle sections of the same fibres. Further, far higher values of k were obtained with normal fibres than with others which had been treated with potassium cyanide in order to convert cystine into lanthionine cross-linkages, which are more stable; the rate of creep of untreated fibres in hydrochloric acid at *pH* 1 is less than in water under the same conditions of temperature and stress, owing to the greater stability of the cystine cross-linkages at low *pH* values. W—9.

***N*-2:4-Dinitrophenylamino-Acids: Identification.** A. Lowther. *Nature*, 1951, **167**, 767-768. Amino-acids, *e.g.*, glycine, serine, threonine, aspartic acid, and leucine, can be regenerated from their dinitrophenyl derivatives by heating with ammonia for 2 hours at 100°; the solution is then evaporated to dryness and the residue dissolved in water and acidified with hydrochloric acid; after ether extraction, the concentrated solution is applied to a paper chromatogram. The technique has been used for investigating the terminal amino-groups of wool.
W—9.

Wool: Esterification of the Carboxyl Groups. P. Alexander, D. Carter, C. Earland and O. E. Ford. *Biochem. J.*, 1951, 48, 629-637. The effect of concentration of acid catalyst, temperature and water on the esterification of the carboxyl groups in wool with alcohols has been studied. The number of carboxyl groups capable of being esterified decreases with increasing molecular weight of the alcohol. The esters formed are readily saponified by alkali and the rate of this reaction is independent of the alcohol used. The effect of esterifying the carboxyl groups on the titration curve, dyeing behaviour and elastic properties of wool has been investigated. It is shown that the combination of acids with wool can be greatly speeded up by efficient agitation and that equilibrium can be established in a few minutes. W—9.

Wool: The Reaction of Combined Cystine with Sodium Bisulphite. G. J. Schuringa, C. Schooneveldt and T. Konings. *Text. Res. J.*, 1951, 21, 281-285. About two-thirds of the cystine linkages of wool react with sodium bisulphite at a temperature of 95° C. to form cysteine and cysteine sulphonate groups. Rinsing with water causes the cystine cross-linkages to be reformed. On prolonged reduction prior to rinsing, all the cystine is not reformed, however. This is thought to be due to displacement of cysteine and cysteine sulphonate groups relative to each other. These effects are compared with those observed with other reagents. W—9.

Butter Fat: Unsaponifiable Matter. I. M. Morice. *J. Chem.* Soc., 1951, 1200-1203. Chromatography has shown the unsaponifiable matter of butter fat to be extremely complex. From it have been isolated the triterpene lanosterol, previously obtained only from wool fat and yeast, and small amounts of four other colourless crystalline compounds not hitherto known to occur in butter. W—9.

10—ECONOMICS

Industrial Organisation: Considerations. Charles J. Lichtensteiger. *Melliand Textilber.*, 1951, 32, No. 3, pp. 196-198. In German. *Melliand Textilber.* (English Edition), 1950, 31, II.E, pp. 66-67. Rationalisation of plant and introduction of automatic machinery in the textile industry as a means of securing maximum production at lowest cost, whilst at the same time paying higher wages for shorter working time, is exemplified in this paper by a description of American methods and machines. Hesitancy in adapting new machinery and methods is to be deplored when it can be shown that the existing plant and procedure (even when comparatively new) can be bettered. C—10.

Practical Time Studies to Assist Overseers. Virgil Redden. *Text. Industr.*, 1951, 115, No. 1, pp. 100-103. A system of time study is described in which the results are presented as a simple table showing the number of operatives required to do a particular job under various production schedules. C—10.

The Productivity of Several Machines Under the Care of One Operator. H. Ashcroft. *J. Roy. Stat. Soc.*, B, 1950, 12, No. 1, pp. 145-151. Probability concepts are applied to determine the extent to which the productivity of machines is reduced when one operator has charge of several so that, whenever two machines stop at about the same time, one has to stand idle until the operator has re-started the other. For the case when the requisite attention times for each re-start are equal, a table of the average number of machines running, and a chart showing the most economical ratio of machines to operators, have been prepared. C—10.

Silk and Velvet Industries of Crefeld. H. Wescher and R. Zeller. *Ciba Review*, 1950, No. 83, pp. 3002-3014, 3017-3027. An account is given of the development of Crefeld and its textile industry. Different papers deal with the early industrial history of the town, the von der Leyens and other textile families, the influence of internal and international events on the town's trade, the later development of the silk and velvet industries, the dyeing and finishing trade, and training and research establishments. C—10.

Motion Study: Full Application. Anne G. Shaw. *Proc. Instn Mech. Engs.* 1950, 162, No. 2, pp. 239-244. Discussion pp. 244-247. Communications pp. 248-249. This paper outlines the methods of applying motion study to an industrial organization. A combination of two processes is recommended: (1) the full-scale investigation, using detailed techniques, and (2) simplified motion study training; a fully trained motion study investigator can divide his time between

carrying out the major investigation, and teaching and supervising others in the use of simplified techniques. Chronocyclegraph illustrations are included, of good and bad movements, and a wiring diagram of the apparatus itself is given. Methods of introducing a motion study campaign are suggested, and a table shows a scheme for a supervisors' course. There are twelve references. In the course of the discussion it was suggested that "motion study" should be called "work study", consisting of method study, motion study and work measurement; two figures illustrate work study in relation to efficiency of production, and analysis of the elements of work study. "Communications" includes Miss Shaw's reply to the discussion. **C—10.**

Jute—the Servant of Industry. L. C. Wright. *Three Banks*, 1950, September, pp. 20-27. This article gives a general assessment of the position of the jute industry in Scotland. Mention is made of difficulties created by competition from India in the inter-war years, the revival of the industry during the war, and supply difficulties that have arisen since the secession of Pakistan from India. Since Dundee has been classified as a Development Area, the many new industries that have been allowed to come into the area are attracting labour away from the jute industry, and it is suggested that the building of new flats in the city might help to prevent this. Modernisation in Dundee, and rise of production costs in India, would, if the Government would define what it considers to be the strategic level of the jute industry, enable the industry to enter a phase of stability. **C—10.**

Rayon Fabrics in America: Manufacture. J. A. van Laer. *Rayon Rev.*, 1950, 4, No. 3, pp. 66-78. In Dutch. Rayon cloth output in the United States is divided into five main categories: (1) furnishing fabrics, pile fabrics and tie-fabrics; (2) rayon filament fabrics; (3) rayon staple fabrics; (4) fabrics made of a combination of rayon filament and rayon staple; and (5) union fabrics containing more than 50 per cent. of rayon. A chart shows the proportion of the total contributed by each category, in million yards and as a percentage, as follows: (1) pile fabrics, 10; furnishing fabrics, 10; tie-fabrics, 16; total, 36 (1·6 per cent.): (2) divided into rayon filament fabrics made (*a*) from yarn of normal twist (smooth-weave fabrics, and others), 776 (35·8 per cent.); (*b*) from high-twist yarns, 583 (26·6 per cent.); total, 1,359 (62·4 per cent.): (3) rayon staple fabrics (twills, linen-types, etc.), 347 (15·8 per cent.): (4) fabrics of mixed rayon filament and rayon staple (ribbed and corded fabrics, shantungs, etc.), 282 (12·9 per cent.): (5) union fabrics, divided into rayon/wool 42, rayon/cotton 98 and others 20, total 160 (7·3 per cent.). Detailed comments are made on many of the materials included in the various categories, and thirty materials are shown in colour reproductions. **C—10.**

Office Services, Centralized or Not? G. J. Mills. *Brit. Management Rev.*, 1950, 9, No. 4, pp. 93-104. The author believes that the more mechanical the job, the greater is the case for centralization, whereas wherever clerical work is closely linked with the technical operation of the business, the theoretical savings of centralization may be seriously offset by a deterioration in the service. The article discusses the advantages and disadvantages of centralizing ancillary services such as typing, filing and duplicating; miscellaneous services, including mail and messenger services; and the major services of accounting and cost accounting. It is concluded that complete centralization is advisable only for duplicating services (excluding the preparation of the printing media), and the keeping of ledger accounts for buying and selling and the corresponding payment and collection of money. Centralization of other services should be carried out with an eye to the fact that where clerical work becomes too remote from the reality represented by the records, error and lack of co-operation grow and flourish. **C—10.**

Japan: Present Economic Position. G. C. Allen. *Three Banks Rev.*, 1951, No. 9, pp. 3-18. A brief review is given of the Japanese economy before 1937. The situation brought about by the war is then discussed. In the early days of the occupation, security and reform were the watchwords, leading to dismantling of plants and break-up of powerful industrial combines. When the realization grew that the Japanese economy was being kept alive by American Aid, and that Communist ambitions in the Far East might mean that Japan would be asked to fill a rôle very different from that planned for her by the occupying powers in 1945, a change of policy took place. But in spite of rapid recovery since then,

the author points out that the fundamental change that has taken place in the balance of trade in the Far East cannot be dealt with merely by making internal adjustments in the Japanese economy. Since 1936, the population of Japan has increased by about 20 per cent. On the other hand, the food-producing areas of Formosa, Korea and Manchuria have been lost, and the export markets of Manchuria and North China, in addition to the loss of the hosiery silk market in America since the adoption of nylon. However, it is pointed out that although the restoration of the whole Japanese economy to full health cannot be foreseen in the near future, this does not mean that Japan cannot emerge as a formidable competitor in certain fields; she had in fact become the largest exporter of cotton piece-goods in the world by the first half of 1950. It is concluded that Japan's international trade is likely to take the form of exchange of cotton, rayon and wool piece-goods, metal wares, and light engineering products, for food and raw materials, and that the United Kingdom must expect sharp competition in textiles, engineering products, and shipping. **C—10.**

Personal Assistants: Use. A. G. Hayek. *Brit. Management Rev.*, 1950, **9**, No. 4, pp. 53-61. It is suggested in this paper that the employment of personal assistants by managers of small undertakings might do much to overcome the difficulties of organisation in these firms, where extensive specialization is not possible. Proposals are made for the selection and training of young men suitable for such posts, and the type of work they can usefully do is defined. The author points out that training and experience in staff work of this kind will become an important stage in the education of young executives aspiring to high posts in management, and will help to create a new generation of industrial leaders trained on professional lines. **C—10.**

Operational Research. H. E. Merritt. *Transport Res. Quart.*, 1951, January, pp. 3-8. The term "operational research" was used during the last war to describe a technique employed by serving officers and scientists to investigate military operations of various kinds (to study, for instance, the optimum size of a convoy). It is suggested in this article that the same principles could usefully be applied to the solution of industrial problems. The essence of the system is to use the scientific method to ensure that the facts are accurately and impartially observed, and to establish the true relationships between the facts. It is frequently found that the assumptions upon which previous practice has been based were without foundation, or that the performance criterion in use is irrelevant or misleading. Reference is made to the importance of the statistical method, and it is pointed out that operational research puts a premium on the personal qualities of all concerned. **C—10.**

Rossendale: Development of the Textile Industry. *J. Rossendale Text. Soc.*, 1950-51, pp. 51-57. A brief account is given of the history of the woollen and cotton industries in Rossendale, and of the introduction of machinery into these industries. **W—10.**

South African Wool Textile Industry. J. C. de Klerk. *Fmg in S. Africa*, 1951, **26**, 99-100. A brief survey of South Africa's achievements in the field of wool textile manufacture. **W—10.**

Sheep: Position in the National Economy. A. Fraser. *J. Farmers' Club*, 1951, Part 3, 30-45. **W—10.**

Tweed Valley Woollen Industry: Economic Background. W. P. H. Sinclair. *Scottish Woollen Technical College Year Book*, 1950, 25-33. **W—10.**

Nylon Manufacture: Japan. *Hosiery Industry Wkly*, 1951, **59**, (25), 1, 17. Note on the announcement that Toyo Rayon Co. Ltd., of Tokyo, has been licensed to manufacture nylon under patents of E. I. du Pont de Nemours & Co. Nylon is being produced by Toyo under the trade-mark "Amilan". **H—10.**

11—INDUSTRIAL WELFARE, INDUSTRIAL PSYCHOLOGY, AND EDUCATION

Activity Vector Analysis. Bill Eastman. *Textile Industries*, 1951, **115**, No. 3, pp. 87-90. A simple test for assessing the temperament of a person is discussed This form of test, known as activity vector analysis, takes less than ten minutes to complete, with a further five to ten minutes for scoring and interpretation of the results. Some instances of its successful application to the placing of workers in suitable jobs are mentioned. **C—11.**

Francolor Dyestuff Research: New Laboratories. Anon. *Textielwezen*, 1951, 7, No. 2, pp. 33-35. In French. This article reports the speech of the Research Director of S.A. Francolor on the occasion of the opening of the new research laboratories. In spite of the tremendous range of colours available, the gaps in the ranges of various dyestuff types justifies intensive research. The speaker also describes the working plan of the establishment. C—11.

Personnel Welfare in Textile Factories. Franz Konopac. *Textil-Praxis*, 1950, 5, No. 8, pp. 484-485. In German. The provision of rest-rooms, washing and toilet accommodation, drinking fountains in workrooms, cloakrooms, canteens, *etc.*, are discussed, particularly in relation to new buildings or extensions. C—11.

Air in Boot and Shoe Factories: Bacterial Contamination. Ann Hirch. *Brit. J. Industr. Med.*, 1951, 8, No. 1, pp. 8-11. The general bacterial count of the air was estimated in each of the six main working departments of thirty-six boot and shoe factories. The count was found to increase with the number of workers in the room, and to be highest in the clicking rooms. There are six references. C—11.

Industrial Research: Co-ordination of Analytical Techniques. R. C. Chirnside and H. P. Rooksby. *Gen. Electr. Rev.*, 1950, 17, No. 4, pp. 207-216. The authors describe the administrative arrangements for the co-ordination of the analytical facilities at the G.E.C. Research Laboratories at Wembley. The functions of the analytical unit thus created are defined and classified. Potentialities and limitations of various analytical techniques are discussed, and a table gives a summary of the principal applications of emission spectroscopy and X-ray analysis, and shows the dependence of these two methods on one another. Some examples of "combined-technique" analysis are given, illustrated with X-ray diffraction patterns and optical spectra. The authors advocate unity of the analytical group, continuous collaboration with other sections of the laboratories, and opportunities for fundamental research in analytical methods. C—11.

Higher Technological Education: Critical Importance in Relation to Productivity. Sir Ewart Smith. *Adv. Sci.*, 1950, 7, No. 27, pp. 297-307. This paper stresses the great need of British industry for leaders and personnel with the highest training in technology and applied science. In comparison with the United States our industrial productivity is low, and one important cause of this is said to be the shortage of university graduates trained in applied science. The common attitude that a career in applied science in industry is inferior to other professions has much to do with steering boys into pure research and classical subjects, but such an attitude is now quite out of accord with present conditions, and detrimental to British needs. Graphs comparing productivity in several industries in the United States and the United Kingdom, and graphs comparing the numbers of university graduates in the two countries, are shown to fortify the argument. C—11.

Dermatitis Caused by DDT. L. Hollander. *Arch. Dermat. & Syph.*, 1950, 62, No. 1, pp. 66-8 (through *Bull. Hyg.*, 1950, 25, No. 12, p. 1281). The author gives a survey of several cases of dermatitis due to DDT, already reported, and describes a further case treated by himself. The patient lay without a shirt on a grass lawn which had been treated with DDT, and in a few days developed a severe dermatitis on the chest, abdomen, face, neck, and arms. The lesions are described, and the treatment outlined. A patch test with DDT was later intensely positive. C—11.

Radio-active Static Eliminators: Hazards in their Use and Control. J. E. Silson. *Amer. J. Pub. Health*, 1950, 40, No. 8, pp. 943-52, 9 Figs. (through *Bull. Hyg.*, 1950, 25, No. 12, p. 1274). Uncontrolled static electricity is a hazard which may lead to fire or explosion. On the other hand, one method of controlling it, by radio-active alpha-emitting bars, may prove to be another hazard, for the irradiation field may be too much in excess of the tolerance figure now generally agreed upon. The author deals in detail with the straightforward methods which have been devised to keep stray or penetrating (gamma) radiation down to safety limits for the workers. C—11.

Indoor Climates: Human Efficiency and Comfort. L. P. Herrington. *Heating & Ventilating*, 1950, 47, No. 7, pp. 53-60, 2 Figs., 11 references (through *Bull. Hyg.*, 1950, 25, No. 12, p. 1278). The article deals with (*a*) the heat balance

of the human body, (*b*) the effects on comfort of various aspects of heating and air conditioning, and (*c*) human efficiency in relation to the thermal environment. For measurement of environmental warmth, use can be made of the charts prepared for the Corrected Effective Temperature scale. Body-temperature regulation is discussed, and the use of an electrically-heated copper mannikin in research on the protective value of clothing is described. The cooling effect of air movement on the body was studied—for example, a temperature of 68° F. with the low air speed of 9 ft. per minute would be equivalent to a temperature of 80° F. with air moving at 600 ft. per minute, the convection loss varying as the square root of the velocity. Panel-heated rooms, which have a low air movement, should have temperatures 2° or 3° F. lower than rooms heated by the circulation of warm air. It is suggested that, in view of the throat-drying that occurs at low humidities, and the increased survival of air-borne organisms at high humidities, further investigation of artificial humidification in relation to comfort is required. **C—11.**

Human Lung: Influence of Particle Size upon the Retention of Particulate Matter in — J. H. Brown, K. M. Cook, F. G. Ney and T. Hatch. *Amer. J. Pub. Health*, 1950, **40**, No. 4, pp. 450-58, 480, 5 Figs. 11 references (through *Bull. Hyg.*, 1950, **25**, No. 12, p. 1254). In determining the toxicity of dust, the characteristic next in importance to the chemical composition is the particle size. Toxic effect results from particles small enough to gain access to the pulmonary alveoli. In the experiment described, a human subject wearing a respirator inhaled air charged with china clay (particle size 0·24 μ to over 5 μ); the exhaled air was directed by a three-way valve into three separate compartments, to contain the air from (1) the upper passages, (2) the intermediate passages, and (3) the alveoli. All particles of 5 μ and over were retained in (1), the frequency decreasing with size to zero at 1 μ. The optimum size for alveolar deposition of particles was 1 μ. Methods of calculating particle size are explained and illustrated. Further studies will deal with sub-microscopic particles. **C—11.**

Thermal Environment: Effect on Man: Methods of Expressing. C. H. Wyndham. Reprinted from *J. Chem. Metallurg. & Mining Soc. South Africa*, 1950, March, pp. 211-19, 1 Fig., 36 references (through *Bull Hyg.*, 1950, **25**, No. 10, p. 1038). The author deals with the various indices of warmth that have been put forward, notably the kata thermometer cooling power and effective temperature, and the sweat-rate index. The methods used (mainly by American workers) for the algebraic analysis of heat exchanges are outlined, and some of the heat transfer constants found by different workers are mentioned. The scales of effective temperature and corrected effective temperature, which rest on empirical bases, are regarded as only interim solutions until more precise biophysical methods are available. **C—11.**

Workers Exposed to Mineral Oil: New Liquid Skin Cleaners. L. N. Savidge and F. H. Tyrer. *Brit. J. Industr. Med.*, 1951, **8**, No. 1, pp. 26-28. Tests have been carried out on the effectiveness of various new skin cleaners in removing potentially harmful lubricating oils from the hands. Results are shown in a series of photographs of hands after cleansing. The photographs are taken in ultra-violet light, which shows up merest residual traces of oil. There is one reference. **C—11.**

Noise and Professional Deafness in an Industrial Plant. H. G. Fabritius, H. Stenwig and E. Thiis-Evensen. *Nordisk Hyg. Tidskr.*, 1950, No. 6, pp. 157-78 7 figs., 11 references (through *Bull. Hyg.*, 1950, **25**, No. 12, p. 1273). In Norwegian. The authors examined 179 workers engaged in noisy occupations—155 miners, 15 platers, and 9 machine house workers. Auditory examination showed that in about half the cases, hearing deteriorated after five years of noisy work, and that no worker who had been subject to noise at work for more than twenty years had normal hearing. The article discusses precautions that can be taken to prevent noise, protective arrangements for the workers, and the need to include systematic auditory examinations in prophylactic work. **C—11.**

Follicular Dermatitis (Occupational) from Contact with Cutting Oil. V. D'Oonofrio and G. Farris. *Rass. Med. Indust.*, Turin, 1949, **18**, No. 6, Nov.-Dec., pp. 251-70, 11 figs., 14 references (through *Bull. Hyg.*, 1950, **25**, No. 10, p. 1033). In Italian. Some categories of metal workers who use mineral non-emulsifiable lubricating oil (known as cutting oil) develop an acneiform folliculitis. This condition appears to become more frequent in its appearance

when lubricating oils of inferior quality are used—for example, during and after the two World Wars. The authors describe twenty-six cases, interesting themselves mainly in the histological appearance of the lesions. They examined samples of the oil used in the turning department, and attribute the lesions to specific irritants in the oil, these irritants being unsaturated groups of hydrocarbons and their products of oxidation, asphalt and pitch. These are always present in mineral oils used commercially which have not been refined to a high degree. Culture and animal inoculation did not reveal any bacterial contamination of the oil. To prevent the dermatitis, the oil used should be of the highest possible grade procurable, and should be changed frequently. If this proves too costly, the oil should be centrifuged at frequent intervals to extract metallic particles and dust which may give rise to irritation. It should also be sterilized. After these two processes, it is also advisable to filter the oil. Its purity can be controlled by chemical, bacteriological and microscopical examinations. As personal preventive measures, the authors recommend the provision of hot and cold showers for the workers, protective clothing, the use of barrier cream, and careful medical supervision combined with explanatory lectures on occupational risks and their avoidance. **C—11.**

Speed and Load Stress in a Sensori-Motor Skill. R. Conrad. *Brit. J. Industr. Med.*, 1951, **8**, No. 1, pp. 1-7. In this study of sensori-motor skill, particular attention has been paid to time as an environmental factor. The author gives the results of an experiment carried out to study the effects on skilled performance of increases of speed and load beyond the point at which deterioration occurs. There are seventeen references. **C—11.**

Quality Control: Review. M. A. Bard. ("Controlling quality in a small mill.") *Hosiery Underwear Rev.*, 7/51, **34**, (7), 138-9, 156. Discusses the conditions necessary to maintain quality in a small mill, giving many practical suggestions. **H—11.**

12—CONFERENCES AND EXHIBITIONS

Conference of the German Textile Chemists' and Colourists' Association, May, 1950. Anon. *Melliand Textilber.*, 1950, **31**, No. 7, pp. 477-480. In German. The principal feature of this report of the conference of the Verein der Textil-Chemiker und-Coloristen (V.T.C.C.) in May 1950 is the introductory speech, by Professor Elöd, on the scope of the papers to be presented, which deal with fibre protective finishing processes. (Note: The individual papers are not covered by this report.) **C—12.**

Developments in Textiles: St. Annes Conference of NFTWMA. National Federation of Textile Works Managers' Associations. *Text. Whly.*, 1951, **47**, No. 1204, pp. 972-1003 (18 pages); No. 1205, pp. 1054-1086 (20 pages); No. 1206, pp. 1134-1145 (8 pages). This is a report of the proceedings of the conference held at St. Annes-on-Sea (from 6th-8th April 1951) by the National Federation of Textile Works Managers' Associations. Papers on the following are presented in full: developing the will to work; short processing (with special reference to the Dodd-Whitin systems); current problems in the cotton industry; modern developments in the use of rayon and other man-made filaments. The discussions which followed these papers are reported. **C—12.**

Swiss Industries Fair, Bâle, 1951. Anon. *Textilwezen*, 1951, **7**, No. 3, pp. 43-65 (17 pages). In Dutch. A survey is made of the machines presented by Swiss textile machinery manufacturers at the Bâle Fair 1951. **C—12.**

CORRECTIONS

Page A262, June, 1951. The abstract entitled "Textiles: Treatment to Protect from Attack by Insects" should be attributed to The Geigy Company Ltd., H. T. Ferguson and R. Williamson, instead of as printed.

J. Textile Institute, 1951, Vol. 42, No. 6, p. A277, 7th abstract. The reference should read *Z. Elektrochem.* 1950, **54**, pp. 325-9 (through *Chem. Abstr.*, 1950, **44**, No. 21, p. 9794^{e}).